

THE MINING CONGRESS JOURNAL

OCTOBER, 1920

VOL. VI

No. 10

SAFETY—EFFICIENCY—CONSERVATION

IN THIS ISSUE:

Official Call for Mining Congress
Convention.

Standardization Conference.

British Gold Supremacy.

New Names for Bureau of Mines Experiment
Stations.

All-American Route From Lakes to Sea.

Discussion of Federal Taxation.

Mining and Petroleum Digest—Public
Opinion—Patents.

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Special Interest to Mining Men.

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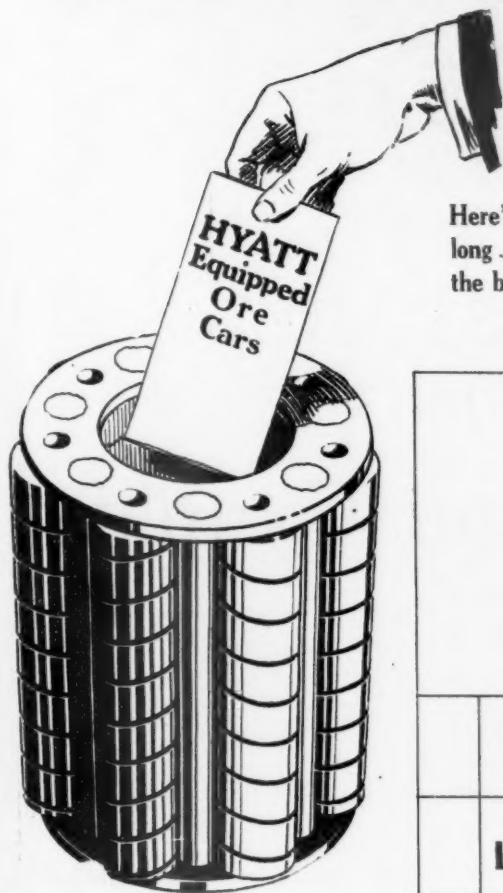
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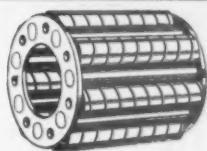
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OCTOBER

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6726 KOPPERS COKE OVENS

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IN THE UNITED STATES AND CANADA
HAVE AN AGGREGATE ANNUAL
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Illinois Steel Company	Gary, Ind.	700
Tennessee Coal, Iron & R. R. Company	Fairfield, Ala.	434
Minnesota Steel Company	Duluth, Minn.	50
Carnegie Steel Company	Clairton, Pa.	768
American Steel & Wire Company	Cleveland, O.	180
National Tube Company	Lorain, O.	208
Woodward Iron Company	Woodward, Ala.	170
Coal Products Mfg. Company	Joliet, Ill.	35
Algoma Steel Corporation, Ltd.	Sault Ste. Marie, Ont.	110
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Republic Iron & Steel Company	Youngstown, O.	143
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Bethlehem Steel Company	Steelton, Pa.	60
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Cambria Steel Company	Johnstown, Pa.	92
Toledo Furnace Company	Toledo, O.	94
Youngstown Sheet & Tube Company	Youngstown, O.	306
LaBelle Iron Works	Follansbee, W. Va.	94
United Furnace Company	Canton, O.	47
River Furnace Company	Cleveland, O.	204
Brier Hill Steel Company	Youngstown, O.	84
Gulf States Steel Company	Gadsden, Ala.	37
Seaboard By-Product Coke Company	Jersey City, N. J.	165
Minnesota By-Product Coke Company	St. Paul, Minn.	65
Colorado Fuel & Iron Company	Pueblo, Colo.	120
Indiana Coke & Gas Company	Terre Haute, Ind.	30
Dominion Iron & Steel Company, Ltd.	Sydney, N. S.	180
Providence Gas Company	Providence, R. I.	40
Jones & Laughlin Steel Company	Pittsburgh, Pa.	300
Rainey-Wood Coke Company	Swedeland, Pa.	110
Birmingham Coke & By-Products Company	Birmingham, Ala.	50
Donner Union Coke Corporation	Buffalo, N. Y.	150
Domestic Coke Corporation	Fairmont, W. Va.	60
Pittsburgh Crucible Steel Company	Midland, Pa.	100
Chicago By-Product Coke Company	Chicago, Ill.	100
Milwaukee Coke & Gas Company	Milwaukee, Wis.	150

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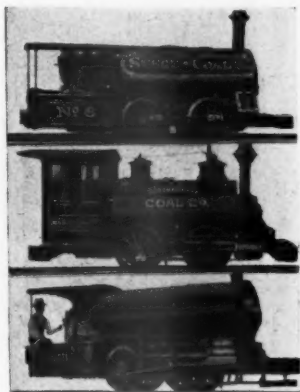
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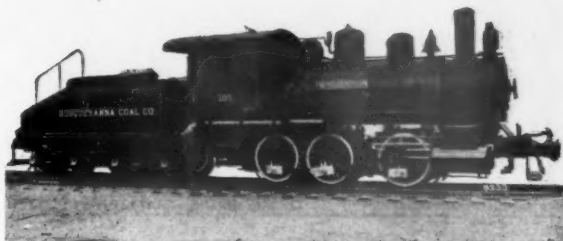
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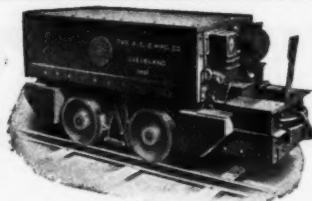
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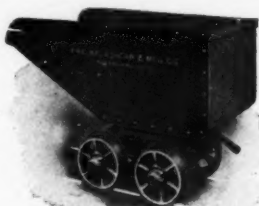
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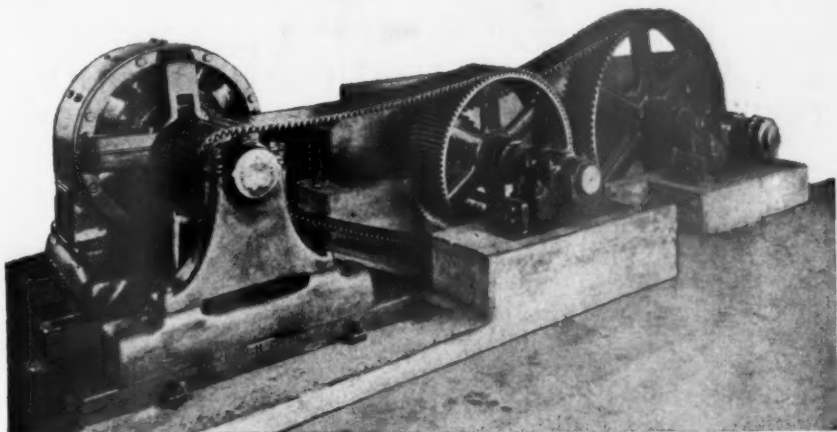


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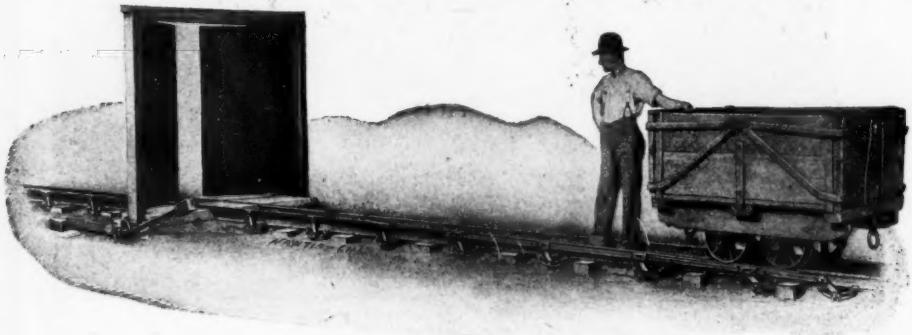
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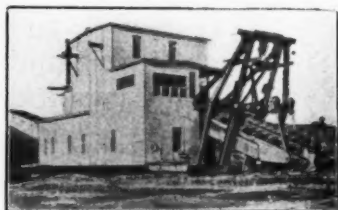
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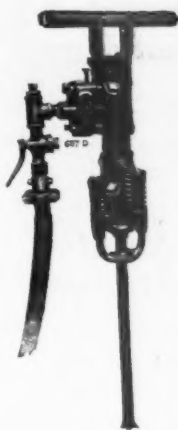
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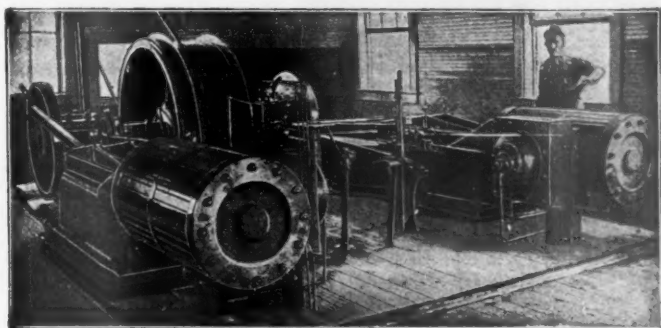
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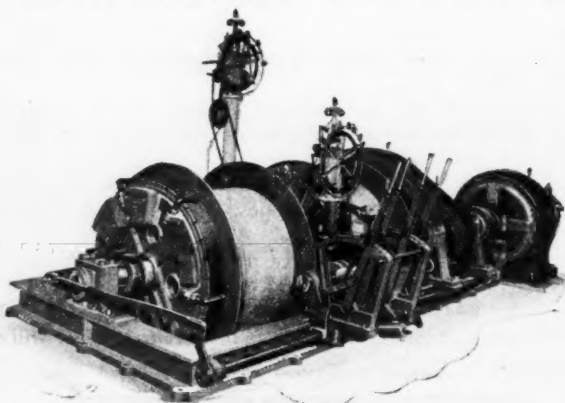
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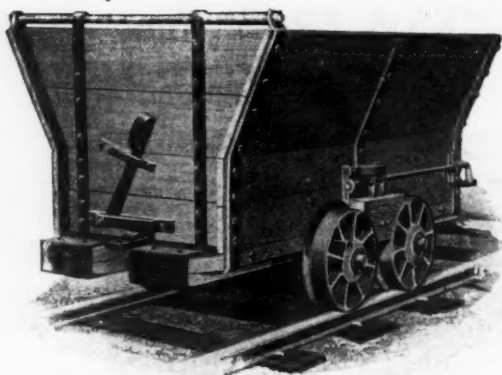
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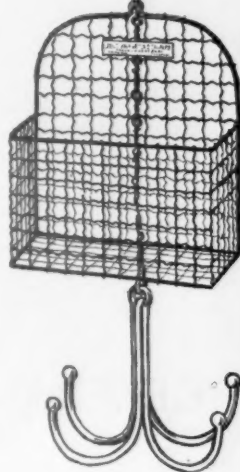
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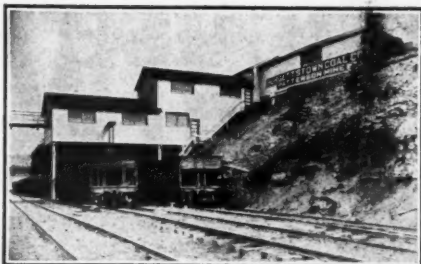
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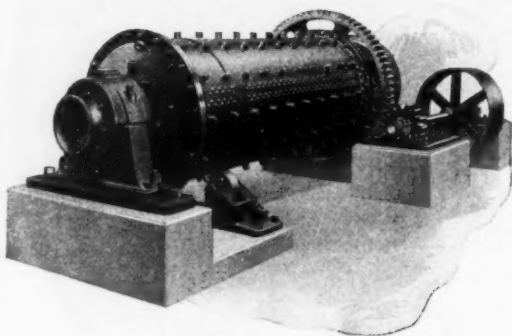
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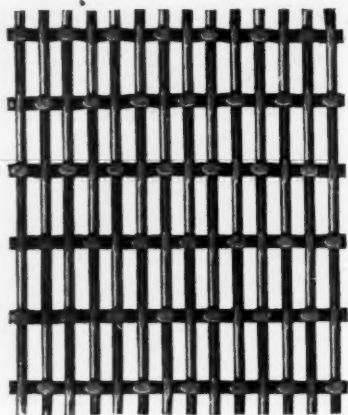
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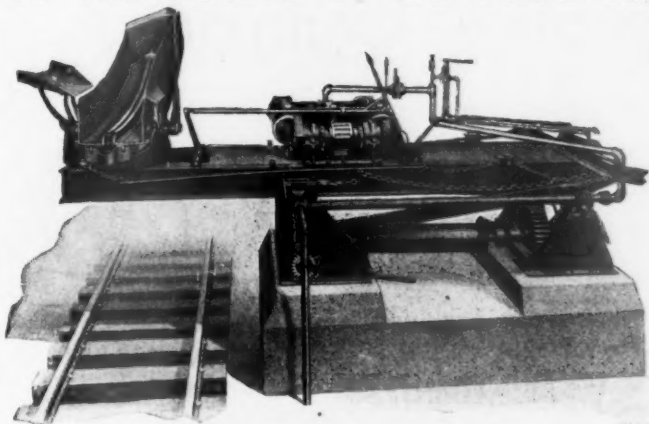
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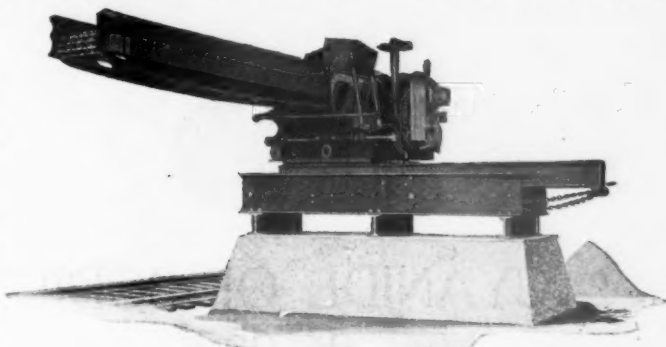
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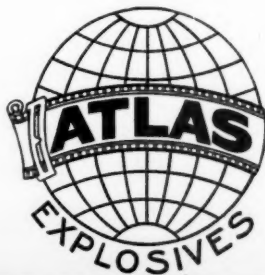
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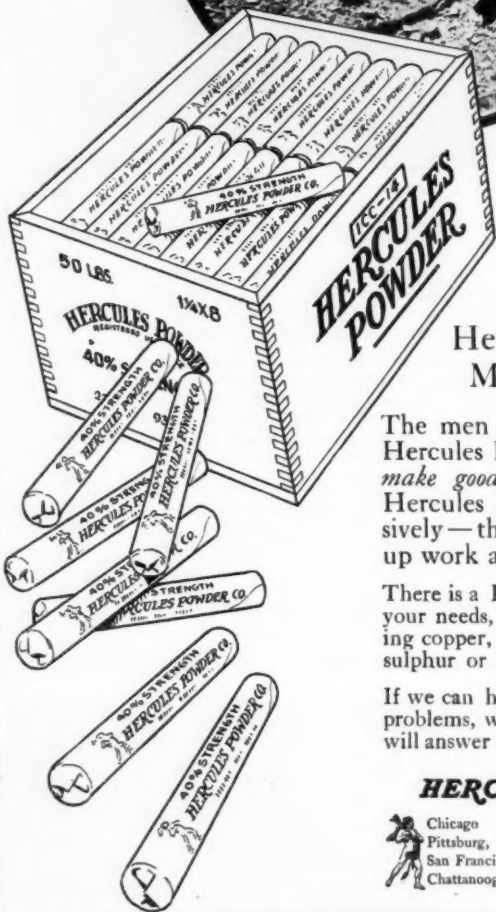
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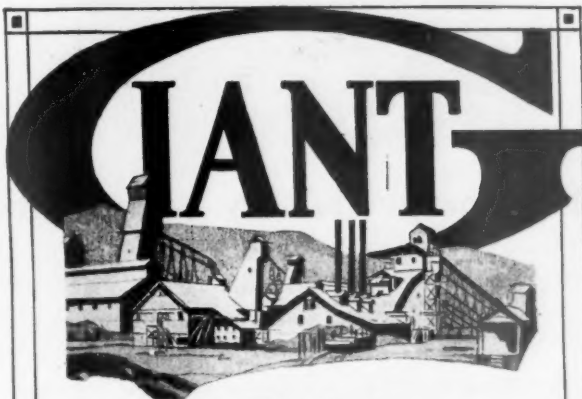


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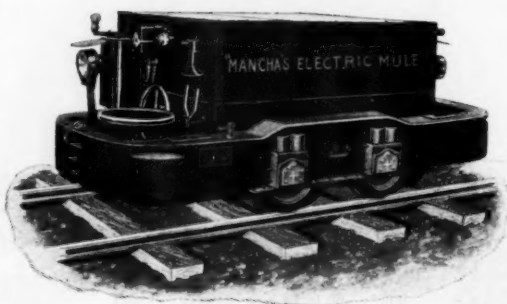
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FUEL OIL IN INDUSTRY

By STEPHEN O. ANDROS, A.B. E.M.

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AUTHOR

Coal Mining in Illinois

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A Book for

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THIS BOOK ANSWERS A REAL NEED

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**19 CHAPTERS—288 PAGES—107 ILLUS-
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"FUEL OIL IN INDUSTRY" outlines the general principles of fuel oil combustion and describes with much detail the proper equipment for burning fuel oil in the various industries and under different conditions. It contains a comparison of coal and fuel oil in which are analyzed the efficiencies of furnaces burning coal and fuel oil under like conditions.

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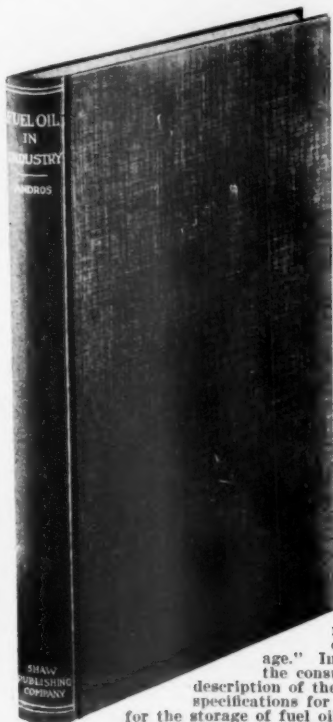
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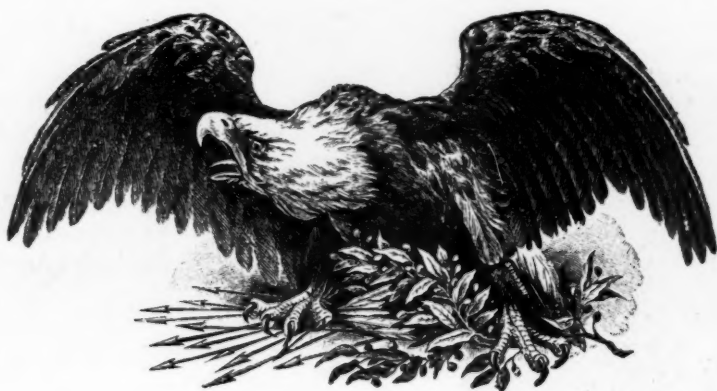
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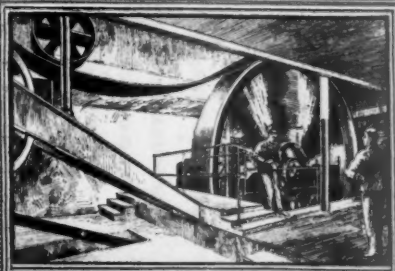
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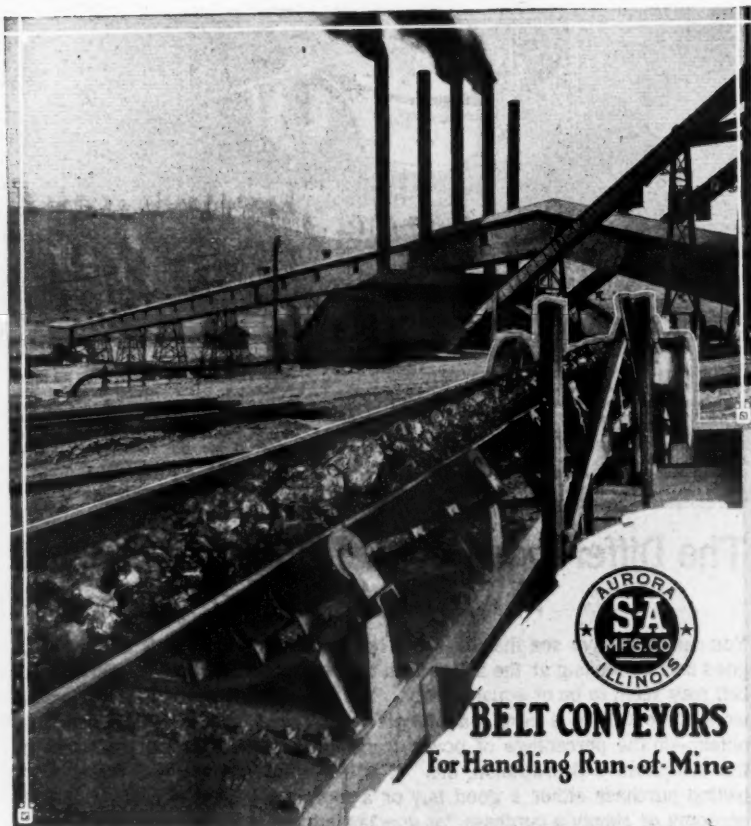
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CONTRACT OBLIGATIONS

Collective bargaining and the closed shop are two principles to enforce the adoption of which millions in wages have been lost, millions in property destroyed and hundreds of lives sacrificed. These principles have been opposed by employers for two substantial and impelling reasons. Collective bargaining, where the transaction embodies the real essentials of a bargain, namely, the meeting of minds in agreement, has not and would not receive any substantial opposition from employers. But collective bargaining as understood by organized labor is that contract which is entered into by the employer under the threat that unless he does so contract, organized labor will not only refuse to work, but will obstruct the operation of his plant with unorganized labor. Collective bargaining, therefore, becomes collective extortion, and as such does not meet the approval of employers and will and necessarily must always meet with their opposition.

The closed shop is objected to by employers not because of any objection to properly organized labor nor any opposition to a perfect co-operation for proper purposes among their employes, but because it takes from the employer the right to direct his operations, to discharge incompetent men and to replace them with men who are competent and willing to perform the service required. When these objections have been surrendered by employers they are met with still another difficulty, namely, that organized labor does not keep its contracts; that all collective bargains made with organized labor are con-

tracts which bind one side only, and the workmen feel at liberty to violate these contracts, and do so without hesitation whenever in their belief such strikes will bring advantage to them.

A peculiar illustration of the above is found in the Kanawha field of West Virginia, where on September 10 the Alma-Thacker Coal Co., in the Williamson field, signed up with the union Kanawha scale of wages. The non-union mines in the Williamson field announced their new wage scale on the 15th. On the 20th the miners at Alma-Thacker struck because their union wage was not as high as the non-union wage of the surrounding mines. This is amusing evidence of the truth of the above statements and presents a condition which is absolutely indefensible. Labor may or may not be a commodity, but a contract for service is a contract, and he who violates a contract is unworthy of public confidence.

LESSON OF THE WALL STREET HORROR

Those of us who have been reading the sensational press during the last year, and with particular reference to the proposal for liberating all so-called political prisoners, have wondered with honest curiosity what attitude would be assumed toward the thirty-seven murders in Wall Street. No other name can be given to the bomb outrage. Thirty-seven people were assassinated.

It is a reasonably safe assumption that no man would commit suicide were it not for a distorted vision of himself attending his own funeral. Similarly,

great political crimes of violence are founded on the hope of the perpetrators that they will become public idols. The bitterest moment to Booth, after his assassination of Lincoln, was when he lay in the woods along the Maryland shore of the Potomac and read the absolute unanimity with which the newspapers of the country abhorred his act. The assassin of McKinley was a Russian radical who would today be called a "Red," and who thought he was liberating America from the domination of a group commonly known as the trusts and who were always pictured as sitting on piles of money, holding McKinley on their knees, with dollar marks all over their waistcoats. It is easy for newspapers to so appeal to popular prejudice—to draw a picture of a corpulent person, labeled "The Trust," squeezing the throat of a pigmy, labeled "The Common People," which it has turned upside down and whose pockets hang empty.

These thirty-seven murders are the natural result of such sentiments as have been expressed by the sensational press in defining its attitude toward so-called radicalism. Their slogan has been "You cannot kill an idea." Possibly not, but an idea may become so violent that it commits suicide.

FREIGHT RATE JUSTICE.

In effect a blanket percentage increase in freight rates works many injustices. These injustices are admitted by the Interstate Commerce Commission, which is proceeding, however, on the theory that it is treating an immense problem which needs a speedy remedy, and that the flat percentage increase is the only remedy possible. The Commission, therefore, has not taken up the detailed problems of any smaller industrial units.

One of the greatest of these is the injustice borne by producers of raw materials, particularly the coal and iron ores. The additional freight rate which the iron-ore industry must bear as com-

pared to the money value of its output is greatly out of proportion with the increased freight burden which is borne by more advanced stages of manufacture.

For example, a Western iron-ore property which produces a grade of ore worth \$2.10 per ton at the mine, and whose freight rate to furnaces was \$2.67 prior to the 25 per cent. war-time increase, now has a freight rate of \$4.50, more than twice the value of its ore at the mine.

The economic injustice resulting from the present ruling is that the increased burden borne by the raw-material industries is disproportionate to that borne by the advanced stages of fabrication. This inequality, which is most apparent and which has not yet been stressed before the Interstate Commerce Commission, is between industries of different types. To the fabricator of materials in advanced stages of manufacture the effect of increased rates is very slight. To the producer of raw materials, whose sole problem is one of transportation of raw materials to a profitable market, the problem of transportation is vastly important.

SILK SHIRTS AND IDLENESS

A great deal of editorial ink has been wasted in bemoaning the extravagance of the workingman during his so-called silk-shirt era. The false idea has been put forth, possibly unintentionally, that there is something intrinsically wrong in a workingman buying a silk shirt or in his wife buying silk stockings. There is nothing wrong in either.

A similar amount of ink has been wasted in the self-righteous statement that it is the duty of the laboring man to labor, and that when he stays away from his job or loafs a certain number of days a week that he is falling down on his duty to civilization. The amount of labor a man wants to do is the laboring man's own business. If a working man spends one or two days' pay in the purchase of silk shirts which he wears over Sunday and then wears into the

mine Monday morning, it is entirely his own business that he do so. But he should not then come before a labor arbitration board and, because he has expended his money for valueless clothing, say that his wage is not sufficient to pay his living expenses and make his extravagance a basis for asking for higher wages in order to meet living conditions; and similarly, if after he has earned \$22 a day for a number of days he wants to lay off for three or four days, he should not advance voluntary idleness in what he is pleased to term his "vacation" as a basis for higher per diem rate so that his yearly average may be sufficient to meet his needs, asking the consuming public in each case to foot the bill.

SLIDING RAILROAD REVENUES

Every mining operator has the feeling that the basic necessity in the transportation situation is a renewal of service at all costs. At the same time the basic increase in freight rates on a percentage plan which raises freight rates out of all proportion to the cost and selling price of mined products, whether they be ore or coal, carries with it certain elements of permanency which he regards as dangerous. There is, too, the suspicion that possibly the new railroad rates have been, like the wind, tempered to the shorn lamb, in that they are designed to make even the poorest of the roads pay its 6 per cent. return.

A similar situation has developed in at least one American city with regard to the city street-car traction lines. In Washington, D. C., which has two traction lines, one traction company admittedly made money on a five-cent fare. The opposition line, however, could not make money at this price, and the fares on both lines were raised to eight cents. This gives to the better managed, more efficiently conducted property an excess of profit which it neither asked for nor needed, simply for the purpose of giving a living profit to the company

which was serving the public less efficiently. It is entirely possible that the blanket increase in freight rates will work the same situation. It may at the same time have another effect which the traction companies have noticed, namely, that the increase in rates does not result in an increase in gross revenue. A certain amount of diminution in business always results from increased rates, and when the rates increase on certain commodities whose limits of price are fixed, these commodities will not be shipped. We may almost venture it as a safe prediction that with the restrictions in shipments, coupled with deflation in business, the railroads' revenue for 1920 will not be greatly in excess of their revenue for 1919.

TRUCKS VERSUS RAILROADS

The recent advance in railroad freight rates is developing a type of competition which only a generally increasing and over-capacity business will prevent from being severely dangerous to railroad earnings. Motor transportation on the public highways, both passenger and freight, is being developed in such a way as to cause apprehension on the part of railroad companies, and in many instances to enlist very active opposition. This is manifest in the efforts which are being made to prevent the use of the roadways for motor-truck transportation except upon payment of such charge for the use of the roadways as will prevent motor transportation from remaining a competitive factor. It is urged that the upkeep of the public highways is borne by general taxation, while railroad companies are not only forced to maintain their own rails, but also to assist in the maintenance of the highways through taxation.

A tire company in Akron, Ohio, for many months during the war and continuously to the present time has transported its product from its factory to Boston, Mass., by motor truck because its deliveries are more quickly made

and the cost practically the same. There can be no question but that the haulage of freight over steel rails upon steel wheels and with ordinary train crews should be made at a much lower cost than would be possible over asphalt roads and upon rubber tires with the required man-power many times multiplied. Where a long haul can be made more quickly by motor truck than by rail there is something radically wrong with the railroad service. Where a short haul can be made more cheaply by motor than by railroad there is something absolutely wrong with the railroad freight rates.

THE MINING CONGRESS JOURNAL, while recognizing the present requirements for increased earnings by the railroads, believed that the downward trend of prices should begin with that fundamental basic part of living costs—transportation. It believed that the railroads, being then under Government control, might better have been aided by the Government to the extent that was necessary to recoup themselves from the demoralization of Government control and the bad effect of a too low freight rate which had been forced upon them by the Interstate Commerce Commission in the pre-war period.

When in the pre-war days a freight-rate increase of 5 per cent. was granted by the Interstate Commerce Commission after a long contest, THE MINING CONGRESS JOURNAL believed that a larger advance than the 5 per cent. was then necessary and should have been granted. This 5 per cent. was followed by a 15 per cent. advance, and then a 25 per cent. advance, and later still by a 25 to 35 per cent. advance, making the present freight rate double what it was prior to 1914. This is too great an increase, and if allowed to stand permanently will make necessary a price level which the gold reserves of this country will not be able to support. THE MINING CONGRESS JOURNAL will always urge a fair, adequate and profit-producing freight rate to railroads efficiently and economically managed. It will never fav-

or a rate which creates an earning which becomes a constant temptation to the railroad gambler upon the one side or the employees' unions upon the other. Railroad earnings and railroad wages should maintain a relation approximately similar to the ratio existing in 1914, and every increase in wages and in transportation rates above that level must and necessarily will measure the extent of the inflation of business. It is plain that the gold standard cannot be maintained with the business of the world done upon the present high-price levels. The trend toward a lower price level is well under way, but it should have been begun by maintenance of normal freight rates and normal charges for the service of public utilities. From the standpoint of the consumer, these deficits might better have been met by direct taxation than by an increased burden upon traffic, which will reflect itself in semi-prohibitive prices to consumers, a natural decrease in freight traffic and an open bid for the competition of motor trucks in freight transportation.

THE GROWTH OF THE PUBLIC CONSCIENCE

As the public conscience becomes more sensitive certain business or industrial principles once accepted are being discarded.

Business procedure which a generation ago at the worst was regarded as sharp business practice is punishable today by justifiable heavy fines, and even prison sentences. This is not because business men have grown worse, but because the world has grown better and the public conscience has become quickened.

A similar interesting situation is arising with regard to the attitude of the consuming public in relation to the demands of labor, particularly as applied to the production of the necessities of life. This is evincing itself in the widespread demand for the open shop.

Five years ago the concern that stood

out for the open shop faced severe criticism. The right of labor to collective bargaining under all circumstances was scarcely to be denied, even by any noncombatant private citizen. Today, because labor has repeatedly refused to adhere to the bargains it has made in its collective capacity, the consuming public is weary of paying the bills caused by the irresponsibility of labor to keep its agreements, and is clamoring for the open shop. This, again is due to a quickening of the public conscience.

COMPETITION FOR THE RAILROADS.

Under the above caption the *Wall Street Journal* comments upon the problem for the railroads presented by the motor truck as a competitor in the transportation of freight, and quotes the *Railway Age* in saying that truck lines have taken to themselves a substantial traffic between New York and points up the river as far as Albany in competition not only with the railroads, but with boat lines on a water route of ample breadth and depth. The *Wall Street Journal* adds:

"The truth is that the country is bestowing upon competitors of the railroads an immense annual subsidy which, in the case of motor trucks, at least, is a highly proper item of a budget because of the millions of passenger cars in use. No one proposes to do anything like it for the railroads, or even to exempt them from taxation in proportion to expenditure of public revenues in building up their rivals. It is a distorted fiscal practice, and the sooner it is corrected, as it must be some way, the better it will be for the public morality and the business of sound government."

The *Wall Street Journal* seems to have lost sight of the fact that the public highways are maintained by the people who use them either by direct taxation or by license fees paid by the users of automobiles and trucks, and that these same highways were maintained at public expense long before railroads were dreamed of. When motor-truck freight transportation over any considerable distance is at all pos-

sible in competition with railroad transportation it is proof that the railway service is so clumsily handled as to need such competition in order that it shall be made to more efficiently meet the public requirements. There was a time when the farmer carried his grain in a sack over his shoulder miles across the country to have it ground into flour upon the best highway available. Later the ox-cart, then the mule team, and later still the motor truck were the means through which a marvelous advance in civilization was accomplished. All of these have used the public highways, and the railroad as such can command business only to the extent that its service is vastly cheaper than that which can be otherwise furnished. Motor-truck transportation for short hauls and for city delivery has a distinct advantage over railroad transportation between the same points. That such competition shall interfere with railroad traffic for any great distances is a libel upon railroad management.

FINANCIAL REVIEW OF THE MONTH.

might normally have occurred. The

Two factors contributed to carrying the buoyancy of the rebound from August lows further into September than first was the necessary support of the market by the banking interest during the flotation of the new French loan. This was a large enough financial effort to justify consistent continuous support over a period of time subsequent to the issuance of the loan. The second factor was the necessary support of the market following the explosion and catastrophe of September 16. A lively market in railroad shares also served to keep up sufficient transactions in the industrials to keep the September levels well above those of August. The announcements of the cut in price by the Ford Motor Co. was followed by the same development on a downward scale in steels, and possibly coppers, as in the similar announcement by the Wana-

makers six months ago of the cut in price of commodities, which was followed by a depression in prices of all commodity stocks. A difficult thing in the present market is to forget the high prices of a year ago and to realize that we are doing both bull and bear trading in the present market simply on a lower range of prices than was in effect a year ago. U. S. Steel at 90 is thought of as being cheap in comparison with 119, but it is not cheap in comparison with 83 $\frac{7}{8}$, which it touched during August.

There has been a heavy curtailment in the whole tire industry for the past six to nine months. Many of these companies are writing off huge losses in inventories, with crude rubber selling at 25 cents a pound and tire fabric coming down in price in conjunction with the lowering cotton prices generally. General Motors made a new record low of 18 $\frac{5}{8}$ %. Another thing which points to a continued low market for some time is the consistently lower prices on Monday than on the Saturday preceding. It has been possible for six months to sell stocks on Saturday and buy them back on Monday at a profit. This is due primarily to the fact that most news is of a hopeful, constructive nature, and news of this nature builds up its influence slowly, so that from the beginning of the week until the end there is a steadily rising feeling of confidence. This has been heretofore knocked off over Sunday by unfavorable bank statements. That this is not the only factor in lowering Monday's prices is shown by the fact that the bank statements over the week end of September 26 were decidedly favorable.

While money rates have eased off so that call funds have on two isolated occasions been available at 6 per cent., and the prevailing rate has not been above 8, it is now admitted that the credit situation, while serving to restrict any unrestrained price advances, has not been sufficient to account for the recent loss in price. The full force of the selling wave which came over the market following the announcement of

the Ford prices did not take place until three or four days after the announcement. This was similar to the situation last spring when the Wanamakers price reduction was announced at the height of the spring rally. Certain motor stocks have already gone below the lows established in August, and it would not be surprising to see a general lower average, lower than any yet made this year, before there is any substantial rise in the market.

The cuts in steel prices which will have to follow will fall largely on the independent companies, the United States Steel Corporation having maintained the Government schedule of prices since the release of control by the War Industries Board. Despite these prospective cuts in price, however, Bethlehem Steel Co.'s new \$20,000,000 issue for financing the construction of boats for Chilean ore trade was oversubscribed. The steel companies point out, however, the interesting fact that the motor industry consumes only 7 per cent. of their product, and that since August two-thirds or more of the steel accumulated at the mills during the preceding four months of the bad transportation situation has been moved, in addition to a current output several per cent. greater than the output during those four months.

The oil stocks have moved in opposition to the remainder of the market and are making new highs, Mexican Petroleum having touched 197. This is possibly due to the knowledge that the one component of the motor industry which is necessary and of which the supply must go on in undiminished amount is the supply of fuel.

The copper companies in issuing an official price of 18 $\frac{3}{4}$ cents are merely making public and official a price which has been ruling in the trade for some time in purchases of metal from first hands.

More price cutting in other lines is expected. Commodity markets are having record-breaking slumps in price.

cotton, sugar, wheat and corn leading the way. This again illustrates the fact that we are simply trading at lower levels and that there is no basis of comparison between stock market prices of this year and a year ago.

It is apparent that easier money conditions, with certain prospects of satisfactory election outcomes in November, and bumper crops all combined, are not sufficient to sustain a bull market at the prices which were sustained last year. We are not having a bear market, however, but are having a bull market on lower levels.

One of the most important financial developments of the month was Secretary Lane's formal statement issued under the authority of a Baltimore bank, in which he states that the conditions of the country are slowly returning to normal. The Federal Reserve Board in its bulletin for September corroborates this in the statement that conditions in public and private finance are beginning to give unmistakable evidence of a return to normal conditions. We must remember that the return to normal is not a return to war-time prices; it is not a return to war-time prosperity or war-time opportunities for profit either in industry or in the stock market, and that when we have arrived at a state of normalcy it will be a satisfactory one, but the road will be long and arduous.

JAPANESE TARIFF REVISION

According to a cable from the American Embassy at Tokyo, a revised tariff law went into effect in Japan on August 29. The following articles were placed on the free list on that date: Explosives, machinery and essential supplies for mining coal and gold; machinery for use in iron and steel plants with an annual capacity exceeding 35,000 tons, and seeds. Goods stored in bonded warehouses before August 29 will be subject to the old rates of duty. Mineral oil with a specific gravity not exceeding 0.875 is to be dutiable at 0.19 yen per 10 gallons, instead of 0.36 yen.

POTASH AND THE FARMERS

The desperate plea made by the farmers the first of the year for nitrate of soda, and which resulted in the passage of a bill permitting the sale of 100,000 tons of the War Department's reserve, seems to have been unnecessary, since less than seventy-five tons of this material were taken between April 24 and the present time. During a portion of that period the market price was higher than the price asked by the War Department, and during practically the entire period the nitrate could have been obtained at as low a price from the Government as could be obtained elsewhere. The statute expired by limitation on September 30.

CONVENTION ORGANIZATION.

By authorization of the directors, organization and voting representation in the twenty-third annual convention of the American Mining Congress will be upon the following basis:

The President of the United States, the Secretaries of the Interior, Treasury, War, Labor and Commerce and the Governors of States—or their personal representatives.

The Members of the United States Senate.

The Members of the United States House of Representatives.

The Directors and Officials designated by Directors of The United States Bureau of Mines; The United States Geological Survey; The United States Bureau of Standards.

State Directors and Inspectors of Mines and State Geological Mining Officials not otherwise designated.

Officers and Members of State Bureaus or Boards in authority on mining matters.

Officers and Members of Faculties or Boards of Trustees of Schools of Mines, Metallurgy, Geology and Engineering.

Officers and Members of National, State or local organizations devoting all or a part of their energies to the mining industries (this includes metaliferous, coal, petroleum, chemical or engineering societies).

Members of The American Mining Congress, mining or oil men, mining engineers, petroleum engineers, geologists or persons financially interested in mining or oil projects who, having no other form of credentials, enroll for membership in The American Mining Congress.

OFFICIAL CALL IS ISSUED FOR MINING CONGRESS CONVENTION

The official call for the twenty-third annual convention of the American Mining Congress and affiliated bodies, to be held in Denver, Col., November 15-19, has been issued by President Bulkeley Wells, Secretary J. F. Callbreath and Thomas B. Stearns, chairman of the General Committee on Arrangements.

The convention will be a gathering of business men and women whose deliberations will be confined to the business of producing minerals, upon which America's wealth is based. Heretofore calls for American Mining Congress conventions have been general in character. The officers and directors, realizing, as stated in the official call, that "the present condition of the mining industry and the peculiar problems now facing all industrial undertakings in the United States create a psychological reason for calling together the mining men of America for an open, frank and unhindered discussion of these problems and conditions, State and national," have addressed the call particularly to the members of Congress, the members of all mining organizations and producers of metals, coal, petroleum and all other mineral and chemical substances.

In addition to the actual membership meeting of the American Mining Congress, there will be held 11 conferences, each of which will be the most important gathering of the year for those interested in its particular subject. The program is in the hands of a committee of 15 representative mining operators and engineers, which committee, it is believed, will present the most interesting outline of business discussions ever presented at any convention of this nature in the United States.

The convention will be held at the Albany Hotel. Headquarters were opened in the hotel early in August, and are in charge of John T. Burns, assistant secretary, who will direct all pre-convention activities. All communications relating to either the convention or the exposition should be sent to Mr. Burns at this address.

Denver being a tourist and convention city of magnitude, those contemplating attending the convention may feel assured of adequate hotel accommodations. The city is well equipped in this respect. An agreement entered into between the hotels and the Denver Civic and Commercial Association protects delegates from overcharges. Specific hotel and railroad information may be secured by writing to convention headquarters.

The Conferences

Nine general divisions of work will be taken up by the convention, as follows:

Industrial: Present-day relations between operator and employee; improvement of effi-

ciency; wages; hours; working conditions; contracts.

Legislation: Tariff pertaining to the products of the mines; uniformity of national and State mining laws; revision of the general mining code; State and national "blue sky" laws; employers' liability laws.

Standardization: There will be a national conference on the standardization of mining machinery, equipment, labor and life-saving devices, safety codes, Government and State co-operative methods, marketing and accounting.

Taxation: The existing excess profits tax law having proven unworkable, unfair and destructive to business, the American Mining Congress is conducting efforts looking to the presentation to the next session of the United States Congress of a revision of the present cumbersome statutes. A committee representing all industries is now at work on this matter and its report will be given consideration. This conference will also discuss State tax laws, which are now confusing and burdensome. An interstate committee on uniformity of tax laws is suggested.

The Gold Problem: There is called a con-

ference of gold producers and financiers to complete the organization of a movement to prevent the further depletion of the nation's monetary gold reserve. There will be a report of the activities thus far carried out by the American Mining Congress in behalf of the McFadden Bill.

War Minerals: This conference will consider the work of the War Minerals Relief Commission, which will end its duties December 1, 1920, and will discuss and decide upon some concrete plan for the relief of worthy claimants who, under the technicalities of the existing law, have been refused relief. A program for the further development and protection of war minerals will be discussed and adopted.

Petroleum: The peculiar problems now facing the petroleum industry and the further development of oil through development of the oil shale deposits of the nation will be fully discussed. The American Mining Congress has in its membership a large number of the leading oil producers of the United States, and is inviting all petroleum associations to participate in this conference for the purpose of adopting a concrete national program in behalf of the petroleum industry, further legitimate promotion, encouragement

of public confidence, the administration of the leasing law, etc.

Conference of Coal Operators: Many problems of vital importance to the coal mining industry will be discussed in one or more sessions of the conference to be called by the coal mining operators holding membership in the American Mining Congress. Such subjects as have been developed by recent events in both anthracite and bituminous fields as affecting production, including labor conditions, legislation, etc., will be handled by competent speakers. The National Coal Association and the various State organizations of coal operators have been invited to participate.

Flotation Conference: There will be a conference of the users of oil flotation processes for the purpose of discussing both the commercial and legal phases of the present development in this important method of ore treatment. A report will be made covering the activities of the American Mining Congress and the Federal Trade Commission in the inquiry now being made as to the contests between Minerals Separation, Ltd., and users of flotation.

Schools of Mines and Metallurgy: This will be the first national conference called by

FROM THE PEOPLE OF COLORADO

In behalf of the People of Colorado, I take pleasure in extending to the mining men of the United States a most cordial invitation to accept of Colorado's hospitality on the occasion of the Twenty-third Annual Session of the American Mining Congress.

Although Colorado has given the world liberally of her precious and commercial metals and minerals, her hills are still vast storerooms of wealth and opportunity still lies here for the miner and capitalist.

The greatest gold camp in the world still lies in the very shadow of Pikes Peak; silver camps dot our hills and canons; vast storerooms of coal, reservoirs of oil and limitless stretches of oil-bearing shale lie dormant.

These facts lend interest to a National Convention of mining and oil men—the interest being mutual between ourselves and our visitors.

November in Colorado usually is a delightful month, when the lure of out of doors is strong and I feel certain that those who come to participate in the serious conferences of the Mining Congress will be well repaid by the hospitality of both our people and our climate.

Signed: OLIVER H. SHOUP,
Governor of Colorado.

the organization committee authorized by the preliminary conference held in St. Louis last year, and to this conference will be invited all officers and faculty members of schools and colleges devoted to mining, metallurgy, engineering, etc., together with Government and State officials associated with this industry.

International Conference on Mexican Relations: The peculiarly distressing conditions which have made it impossible for the Government of Mexico to fully protect Americans and American mining and oil interests during the past few years, the continuance of this uncertainty and the recent adoption of a constitution for Mexico, which contains certain clauses restrictive and destructive as affecting American investments and rights, creates the necessity for a dispassionate, frank and businesslike discussion between American investors and Mexican business and political leaders. There is, therefore, being arranged an international conference of this character which, it is hoped, will result in the re-establishment of political and commercial amity between the two peoples and the adoption of a constructive program to be presented to the Governments of the United States and Mexico.

Annual Members' Meeting: The annual members' meeting for the transaction of such business as properly comes before an exclusive meeting of the members of the American Mining Congress for the election of officers, for the designation of the next annual con-

vention, etc., will occur at the Albany Hotel, Denver, Colo., Thursday, November 18, at an hour to be designated later.

All members of the American Mining Congress are asked to constitute themselves an active committee on organization. Our problems are vital and this convention should be the most effective in the history of our organization. It is up to you to sacrifice, if need be, in order that organized disruptionists and organized radicals may be met by a completely organized industry back of a concrete operative plan in which you will have a definite and active part.

The Exposition.

The exposition held in connection with the twenty-second annual convention in St. Louis last year was a successful experiment. It was planned that such an exposition should be continued at the annual conventions. Inability successfully to house a large exposition of this character in Denver this year, makes it necessary to adopt a plan for giving a strictly educational and scientific exhibit which will be under a special committee working with the permanent American Mining Congress committee on standardization. This exhibit will occupy the first floor of the Albany Hotel, and special housing arrangements have been made for the street and adjacent property.

By order of the Secretary of the Interior, Hon. John Barton Payne, the United States Geological Survey and the United States Bureau of Mines will co-operate fully in the matter of exhibits and participation in the convention and exposition. The State of Colorado and a number of Western States have tentatively promised their co-operation.

FROM THE CITY OF DENVER

Denver, Colorado,

September 15, 1920.

Denver, Queen City of the Plains, a great mining center, a commercial mart, the railroad gateway between the East and the West, is built upon gold. Into her banks flow the wealth of hundreds of mining camps in the hills of Colorado, and out of the hearts of her people flows a wealth of fellowship and commercial power which we designate as "The Denver Spirit."

In this Denver spirit, and representing the men and women of the City, it is a pleasurable duty to extend a welcome to the mining men of America and to say we are proud to entertain the Twenty-third Annual Convention of the American Mining Congress and shall contribute our share to its success.

Signed: DEWEY C. BAILEY, Mayor.

STANDARDIZATION CONFERENCE

The work of the Committee on Standardization of Mining Equipment, as applied to both coal and metal mines, is progressing rapidly. Its progress is a source of great gratification to the American Mining Congress, the sponsor for the undertaking. During the short period which has elapsed since the committee was organized it has been able to do some real constructive work, and at the national convention to be held in Denver November 15 to 19, it will be able to offer some valuable suggestions for standards to be adopted by the industry.

This is particularly true of the coal branch of this committee, which had the advantage of several months' application before the organization of the metal branch. It was because of the successful work of the coal committee during 1919 that, at the St. Louis convention of the American Mining Congress, it was decided to extend the activities of the committee and incorporate the metal industry in its work. With this in mind, Charles A. Mitke, a nationally-known engineer, whose headquarters are at Bisbee, Ariz., undertook the chairmanship of the metal branch, and at the present time the personnel of the committee has been completed and its work well outlined and organized for rapid action during 1921.

On August 30 a meeting was held at the Engineers' Club in Chicago between representatives of the American Engineering Standards Committee, American Institute of Mining and Metallurgical Engineers, the United States Bureau of Mines, the National Safety Council and the American Mining Congress, at which conference ways and means for co-ordinating the work on standardization now being carried on by these various organizations were discussed at considerable length. After the discussion a resolution was adopted authorizing the American Engineering Standards Committee to form a subcommittee to co-ordinate the standardization of mining practice and equipment. This subcommittee is to be representative of the principal organizations now in the field working on standardization of mining practice and equipment, or which might be expected to engage in such work. It is anticipated that by the submis-

sion to the American Engineering Standards Committee of the reports of the general committee there will be avoidance of any duplication of effort, and that the standards adopted will have the hearty endorsement of all those interested in the question of standardization.

At the annual convention of the American Mining Congress to be held in Denver, November 15 to 19, there will be held a national standardization conference to which will be invited representatives of every large mining property, both coal and metal, all mining machinery and supply firms, representatives of the United States Government, etc. It is anticipated that there will be in attendance at this conference no less than 500 representatives of the factions interested.

At that time Chairman Roberts of the Coal Section will deliver a report as to the progress which has been made in the standardizing of coal-mining equipment, and will carry on a discussion with the representatives present as to the feasibility of the adoption of the recommendations made by his committee. Chairman Mitke of the Metals Committee will also render a report of what has been accomplished in the limited period since the organization of his committee, but will more generally outline the plans he has in mind for the development of the work of his committee during the coming year. There will also be discussion as to the best ways and means of carrying out the recommendations for the standardization of metal mining equipment.

The subcommittees on Mine Ventilation, Underground Power Transmission, Power Equipment, Underground Transportation, and Mining and Loading Equipment, under the coal branch of the committee, have made very substantial progress with the work allotted to them.

Underground Transportation.

This committee, composed of prominent representatives from coal operators, manufacturers, consulting engineers, etc., has held several sessions during the past few months, and as indicated by their several reports submitted to the Chairman of the General

Committee, have made very substantial progress in reaching conclusions and making recommendations on several important features of underground transportation, including mine track gauges, track clearances, track curvatures and kindred subjects.

Mining and Loading Equipment.

This committee is composed of 14 representatives. It has been somewhat slow in completing organization, but has finally gotten down to work, and its first report, submitted recently by the chairman, indicates that it is now ready for active participation in the program of standardization.

Mine Ventilation.

This subcommittee has five members selected from same sources as those mentioned above, and its reports indicate considerable progress on the many important features of mine ventilation.

Outside Coal-Handling Equipment.

This subcommittee is composed of seven representatives. The duties of the chairman of this subcommittee, as chairman of the general committee, have prevented him from giving the proper amount of time to directing the work of this subcommittee. However, the members of the subcommittee have many important questions under consideration and will submit their recommendations in writing to the chairman at an early date, after which time the committee will have a meeting and draw up a report to be presented by the general committee at the annual convention.

Underground Power Transmission.

This subcommittee is composed of five members besides the chairman, including representatives from the U. S. Bureau of Mines. It has had several sessions and has reached definite conclusions on important features of underground power transmission. It is expected to make a most interesting report to the annual convention.

Power Equipment.

There are 16 members of this committee from very representative companies, and the committee has been very active since the time

of its organization. Chairman Pauly deserves a great deal of credit for the enthusiasm he has aroused in the members of his committee, and for the good work already done.

COAL DIVISION—COMMITTEE ON STANDARDIZATION

General Committee.

Colonel Warren R. Roberts, Chicago, Ill., Chairman; Geo. R. Wood, Consulting Engineer, Charleston, W. Va.; C. E. Watts, Efficiency Engineer, Berwind-White Coal Mining Co., Windber, Pa.; A. B. Kiser, Electrical Engineer, Pittsburgh Coal Co., Pittsburgh, Pa.; W. J. Montgomery, Manager Ventilating Department, Jeffrey Manufacturing Co., Columbus, O.; K. A. Pauly, Power and Mining Engineering Department General Electric Co., Schenectady, N. Y.; Carl Scholz, General Manager Raleigh-Wyoming Coal Co., Charleston, W. Va.

Chairmen—Subcommittees.

Carl Scholz, Mining and Loading Equipment; C. E. Watts, Underground Transportation; A. B. Kiser, Underground Power Transmission; Geo. R. Wood, Drainage; W. J. Montgomery, Ventilation; Col. W. R. Roberts, Outside Coal-Handling Equipment; K. A. Pauly, Power Equipment.

Underground Transportation.

C. E. Watts, Chairman; Charles M. Means, Consulting Engineer, Pittsburgh, Pa.; Graham Bright, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.; Joseph Bryan, General Electric Co., Pittsburgh, Pa.; F. C. Coseo, Jeffrey Manufacturing Co., Columbus, O.; D. F. Lepley, General Manager Connellsville Manufacturing & Supply Co., Connellsville, Pa.; C. W. Larson, Engineer, Mining Department, General Electric Co., Erie, Pa.; E. A. Waters, General Manager Hicks Coal Interests of Western Pennsylvania, Kiskiminetas Junction, Pa.; J. Milliken, President Industrial Car Manufacturers Institute, Pittsburgh, Pa.; T. A. Parker, Lincoln Steel & Forge Co., St. Louis, Mo.; A. H. Ehle, General Sales Manager Baldwin Locomotive Works, Philadelphia, Pa.; H. K. Porter, Sales Manager, Mine Car Department, Hyatt Roller Bearing Co., Sixth Ave. and 41st St., New York City.

Mining and Loading Equipment.

Carl Scholz, Chairman; D. J. Carroll, Chicago, Wilmington & Franklin Coal Co., Benton, Ill.; E. N. Zern, Mining Engineer and Editor *Mining Catalog*, Pittsburgh, Pa.; C. A. Cabell, Vice-President Carbon Coal Co., Kanawha National Bank Building, Charleston, W. Va.; N. D. Levin, Jeffrey Manufac-

turing Co., Columbus, O.; J. M. Clark, Clark & Krebs, Charleston, W. Va.; M. Mitchell, Sullivan Machine Co., St. Louis, Mo.; William Whaley, Myers-Whaley Company, Knoxville, Tenn.; Wm. O. Duntley, Duntley-Dayton Company, Chicago, Ill.; E. S. McKinley, 625 Denham Building, Denver, Col.; E. G. Hamilton, 310 Schultz Building, Columbus, O.; Walter Stevens, Valier Coal Co., Valier, Ill.; S. W. Farnham, Mining Engineer, Goodman Manufacturing Co., Chicago, Ill.; E. K. Bowers, Morgan Gardner Electric Co., 68 E. Adams St., Chicago, Ill.

Drainage.

George R. Wood, Chairman; M. C. Benedict, Berwind-White Coal Mining Co., Windber, Pa.; Walter D. Stockley, Fairmont Mining Machinery Co., Fairmont, W. Va.; E. D. Knight, Cabin Creek Consolidated Coal Co., Kayford, W. Va.; E. F. Austin, Manager Mine Pump Department, Dravo-Doyle Company, Pittsburgh, Pa.

Ventilation.

W. J. Montgomery, Chairman; E. N. Zern, Mining Engineer and Editor *Mining Catalog*, Pittsburgh, Pa.; J. R. Robinson, President Robinson Ventilating Co., Pittsburgh, Pa.; G. E. Lyman, General Superintendent Madison Coal Corporation, Glen Carbon, Ill.; A. S. Richardson, Ventilating Engineer Anaconda Copper Mining Co., Butte, Mont.; W. A. Rowe, Chief Engineer American Blower Co., Detroit, Mich.

Outside Coal-Handling Equipment.

Col. Warren R. Roberts, Chairman; G. F. Osler, G. S. Carnegie Coal Co., Pittsburgh, Pa.; W. A. Bishop, G. S. Pocahontas Consolidated Collieries, Pocahontas, Va.; F. W. Whiteside, Chief Engineer Victor American Fuel Co., Denver, Col.; James Needham, General Manager St. Paul Coal Co., Chicago, Ill.; F. G. Morris, G. S. Coal Mines, Republic Iron & Steel Co., Sayreton, Ala.; A. J. Sayres, C. E. Link Belt Co., Chicago, Ill.; W. J. Patterson, President Heyl & Patterson Co., Pittsburgh, Pa.

Underground Power Transmission.

A. B. Kiser, Chairman; Harry M. Warren, Electrical Engineer D. L. & W. R. R., Scranton, Pa.; W. A. Chandler, Electrical Engineer H. C. Frick Coal Co., Scottdale, Pa.; R. L. Kingsland, General Superintendent P. & M. Department, Consolidated Coal Co., Fairmont, W. Va.; Carl Lee, Electrical Engineer Penbody Coal Co., McCormick Building, Chicago, Ill.; L. C. Hsley, 4800 Forbes St., Pittsburgh, Pa. (Bureau of Mines).

Power Equipment.

K. A. Pauly, Chairman; D. C. McKeeham, Box 913, Union Pacific Coal Co., Rock Springs, Wyo.; G. S. Thompson, Colorado Fuel & Iron

Co., Pueblo, Col.; H. F. Randolph, Consulting Engineer, 2330 Oliver Building, Pittsburgh, Pa.; M. D. Kirk, Pittsburgh Terminal R. R. Coal Co., Wabash Building, Pittsburgh, Pa.; R. W. E. Moore, Westinghouse Electric & Manufacturing Co., E. Pittsburgh, Pa.; R. L. Kingsland, Consolidated Coal Co., Fairmont, W. Va.; W. C. Shunk, Stonega Coal & Coke Co., Big Stone Gap, Va.; J. T. Jennings, Philadelphia & Reading Coal & Iron Co., Pottsville, Pa.; W. C. Adams, with Allen & Garcia, Chicago, Ill.; O. P. Hood, Chief Mechanical Engineer, Bureau of Mines, Washington, D. C.; Graham Bright, Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.; A. J. Nicht, Allis-Chalmers Company, Milwaukee, Wis.; Stephen H. Green, Pacific Coast Coal Co., Seattle, Wash.; Charles Le-grand, Phelps-Dodge Corporation, Douglas, Ariz.; Martin J. Lide, Consulting Engineer, Birmingham, Ala.; C. D. Woodward, Chief Electrical Engineer Anaconda Copper Mining Co., Butte, Mont.

Advisory Committee on Safety Codes.

S. W. Farnham, Goodman Manufacturing Co., Chicago, Ill., representing Mining and Loading Equipment; T. A. Parker, Lincoln Steel & Forge Co., St. Louis, Mo., representing Underground Transportation; Martin J. Lide, Consulting Engineer, Birmingham, Ala., representing Power Equipment; W. A. Rowe, American Blower Co., Detroit, Mich., representing Ventilation; A. B. Kiser, Pittsburgh Coal Co., Pittsburgh, Pa., representing Underground Power Transmission.

METAL DIVISION—COMMITTEE ON STANDARDIZATION

General Committee.

Charles A. Mitke, Bisbee, Ariz., Chairman; Norman B. Braly, General Manager North Butte Mining Co., 14 W. Granite St., Butte, Mont.; William Conibear, Inspector, Department of Safety, Cleveland-Cliffs Iron Co., Ishpeming, Mich.; Norman Carmichael, General Manager Arizona Copper Co., Clifton, Ariz.; Murray Morris Duncan, General Manager Cleveland-Cliffs Iron Co., Ishpeming, Mich.; H. C. Goodrich, 1408 Deseret Bank Building, Salt Lake City, Utah; William B. Daly, Assistant General Manager Anaconda Copper Mining Co., Butte, Mont.

Chairmen—Subcommittees.

Norman B. Braly, Drilling Machines and Drill Steel; William Conibear, Fire-Fighting Equipment; Norman Carmichael, Mine Timbers; Murray Morris Duncan, Underground Shovel Equipment; H. C. Goodrich, Steam Shovel Equipment; William B. Daly, Underground Transportation; Charles A. Mitke, Mine Ventilation (temporary).

Drilling Machines and Drill Steel.

Norman B. Braly, Chairman; Arthur Foote, North Star Mines, Grass Valley, Cal.; O. J. Eggleston, Manager U. S. Smelting, Refining & Mining Co., Kennett, Cal.; C. S. Elayer, General Foreman Arizona Commercial Mining Co., Globe, Ariz.; H. Seamon, Efficiency Engineer United Verde Copper Co., Jerome, Ariz.; George H. Gilman, 125 Prescott St., East Boston, Mass.; Arthur Notman, Superintendent Mine Department Phelps-Dodge Corporation, Copper Queen Branch, Bisbee, Ariz.; Arthur Crane, Explosive Expert Hercules Powder Co., San Francisco Cal.; L. C. Bayless, Chief Engineer Ingersoll-Rand Company, Phillipsburg, N. J.; Ochs Potter, Superintendent Superior Division, Calumet & Hecla Mining Co., Houghton, Mich.; R. T. Merrill Safety and Efficiency Engineer Inspiration Consolidated Copper Co., Inspiration, Ariz.; Roy Marks, Stope Engineer, Box 1676, United Verde Extension Mining Co., Jerome, Ariz.; Charles Lees, Superintendent Iron Cap Copper Co., Copper Hill, Ariz.; Earl Hastings, Foreman Clay Mine, Arizona Copper Co., Ltd., Morenci, Ariz.; W. G. Scott, Superintendent Coronada Mines, Arizona Copper Co., Ltd., Metcalf, Ariz.; J. A. Fultop, Idaho-Maryland Mines Co., Grass Valley, Cal.; Charles A. Smith, Mine Superintendent Ray Consolidated Copper Co., Ray, Ariz.; Frank Ayer, Mine Superintendent Moctezuma Copper Co., Pilares De Nacozari, Son., Mex.; Thomas C. Baker, Assistant General Manager The Mexican Corporation, Edificio "La Mutua," Mexico City, Mex.

Fire-Fighting Equipment.

William Conibera, Chairman; Guy J. Johnson, Safety Engineer Homestake Mining Co., Lead, S. D.; A. A. Kroghdahl, Safety Engineer Oliver Iron Mining Co., Virginia, Minn.; J. T. Young, Safety Inspector Arizona Copper Co., Morenci, Ariz.; H. J. Rahilly, Superintendent Mine, Fire and Hydraulic Filling Department, Anaconda Copper Mining Co., Butte, Mont.; Orr Woodburn, Safety First Director Globe-Miami District, Globe, Arizona.

Mine Timbers.

Norman Carmichael, Chairman; Lucian Eaton, Superintendent Cleveland-Cliffs Iron Co., Ishpeming, Mich.; G. W. Nicholson, General Superintendent United Verde Extension Mining Co., Jerome, Ariz.; W. S. Boyd, Manager Ray Consolidated Copper Co., Ray, Ariz.; W. G. McBride, General Manager Old Dominion Company, Globe, Ariz.; Ira B. Joralemon, Assistant General Manager Calumet & Arizona Mining Co., Warren, Ariz.; Felix McDonald, Mines Superintendent Inspiration Consolidated Copper Co., Inspiration, Ariz.; T. Evans, General Superintendent Cananea Consolidated Copper Co., Cananea, Sonora, Mex.; John Kiddie, Division Superintendent Arizona Copper Co., Morenci, Ariz.

Underground Shoveling Machines.

Murray Morris Duncan, Chairman; R. W. Macfarlane, Mining Department, Longfellow Division, Arizona Copper Co., Morenci, Ariz.; William Whaley, General Manager Myers-Whaley Company, Knoxville, Tenn.; H. De Witt Smith, Superintendent of Mines United Verde Copper Co., Jerome, Ariz.; Albin F. Victor, Manager of Sales Lake Superior Loader Co., Duluth, Minn.; J. H. Hensley, Mine Superintendent Miami Copper Co., Miami, Ariz.; H. E. Billington, Manager of Sales The Thew Shovel Co., Lorain, Ohio.

Steam-Shovel Equipment.

H. C. Goodrich, Chairman; Robert E. Tally, General Superintendent, United Verde Copper Co., Clarkdale, Ariz.; H. G. S. Anderson, Mining and Metallurgical Engineer, Hurley, N. Mex.; C. B. Lakenan, Nevada Consolidated Copper Co., McGill, Nev.; G. W. Barnhart, Manager, San Francisco Branch of Marion Steam Shovel Co., 741 Monadnock Building, San Francisco, Cal.

Underground Transportation.

William B. Daly, Chairman; George H. Booth, Mechanical Engineer, Inspiration Consolidated Copper Co., Inspiration, Ariz.; R. R. Boyd, Assistant Superintendent, Mine Department, Copper Queen Branch, Phelps-Dodge Corporation, Bisbee, Ariz.; T. K. Scott, Chief Engineer, Box No. 100, Miami Copper Co., Miami, Ariz.; Andover Syverson, Chief Engineer, United Verde Extension Mining Co., Jerome, Ariz.; E. M. Norris, Assistant Superintendent of Mines, Anaconda Copper Mining Co., Butte, Mont.; H. T. Hamilton, Manager Moctezuma Copper Co., Nacozari, Sonora, Mex.; R. E. Howe, Assistant General Manager, Cananea Consolidated Copper Co., Cananea, Sonora, Mex.; D. S. Calland, Managing Director Compania de Real del Monte de Pachuca, Pachuca, Hidalgo, Mex.

Mine Ventilation.

Charles A. Mitke (Temporary); Don M. Rait, Assistant Superintendent of Mines, Calumet & Arizona Mining Co., Warren, Ariz.; E. B. Williams, Manager, Mine Fan Department, B. F. Sturtevant Company, Hyde Park, Boston, Mass.; W. A. Rowe, Chief Engineer American Blower Co., Detroit, Mich.; Robert N. Bell, State Mine Inspector, Boise, Idaho.; F. L. Stone, care of General Electric Co., Schenectady, N. Y.; O. K. Dyer, Buffalo Forge Co., Buffalo, N. Y.; C. E. Legrand, Consulting Engineer, Phelps-Dodge Corporation, Douglas, Ariz.; A. S. Richardson, Chief of Ventilating Department, Anaconda Copper Co., Butte, Mont.; Norman G. Hardy, Chief Mechanical Engineer, Arizona Copper Co., Clifton, Ariz.; A. C. Stoddard, Chief Engineer, Inspiration Consolidated Copper Co., Box No. 15, Inspiration, Ariz.; D. Harrington, care of Bureau of Mines, Golden, Col.

INTERNATIONAL MINE RESCUE AND SAFETY-FIRST MEETING

HONORS DIVIDED BETWEEN TEAMS FROM EAST AND WEST.

East and West divided honors at the International First-Aid and Mine Rescue Meet. held in Denver, September 9-11. Three of the first-place winners were from the East, while a Western team rolled up the greatest number of points in all contests and thereby captured first grand honors.

The contests were held under joint auspices of the United States Bureau of Mines, the Colorado Chapter of the American Mining Congress, the Rocky Mountain Coal Mining Institute, the American Institute of Mining and Metallurgical Engineers and the Colorado Society of Engineers. D. J. Parker of Pittsburgh, chief of all rescue work for the Bureau of Mines, was personally in charge. Dr. F. G. Cottrell, director of the Bureau of Mines, and J. F. Bailey, assistant director, were in attendance.

First place in the first-aid contests was won by the New River Company. Captain Louis Roncaglione of Scarbro, W. Va. First place in the mine rescue contests was won by the H. C. Frick Coke Co., Captain S. Cominsky of Leisenring, Pa. First place in resuscitation work was won by the team representing the Knox County Operators' Association, Captain John Moore of Bicknell, Ind. The team from the Wadge mine of the Victor American Coal Co., Denver, Col., Captain Robert Halbert, won first place on its combination first-aid and mine rescue work, and by virtue of scoring the greatest number of points was considered first winner of the meet.

Mine Rescue Contest.

Twenty-one teams were entered and seventeen actually contested in mine rescue work, each member being subjected to individual questioning. Judges were Orr Woodburn of the Globe-Miami Rescue Association; R. Z. Virgin, technical editor of the Coal Trade Bulletin; William Nesbitt, mine inspector of the Keystone Coal & Coke Co.; L. M. Kuhns of the Gallup-American Coal Co.; W. G. Dun-

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JOSEPH A. HOLMES' HEROISM LAUDED BY DR. COTTRELL.

Tribute to the memory of Joseph A. Holmes, first director of the Bureau of Mines, was paid by the incumbent director, Dr. F. G. Cottrell, at Denver when he announced the award by the Joseph A. Holmes Safety Association of diplomas and gold medals to seven heroes, three of whom perished in the line of duty.

Announcement of the award was made on September 11 during the International Mine Rescue and Safety First meeting, which was held under joint auspices of the Bureau of Mines, the Rocky Mountain Coal Mining Institute, the Colorado Chapter of the American Mining Congress, the American Institute of Mining and Metallurgical Engineers and the Colorado Society of Engineers. Dr. Cottrell pronounced Joseph A. Holmes "a martyr to the cause of safety," and his brief address of announcement was one of the features of the entire meeting.

Dr. Cottrell spoke, in part, as follows:

"It has fallen to my lot tonight as president of the Joseph A. Holmes Safety Association to announce the names of those heroes of the mines to whom the association has awarded its gold medals and diplomas in recognition of their heroic acts in risking their own lives to save the lives of others within the ranks of the mining industry.

"It is particularly appropriate that the organization to give recognition to acts of heroism by the men of this great and hazardous industry should be named for the man whose frail body succumbed to the strain of providing safety to the men who toil in the mines.

"Joseph A. Holmes proved a martyr to the cause of safety just as some of the men whose deeds are to be recounted briefly tonight. Those who knew him loved him, not only for his great ability, but especially for his great unselfishness in the cause of the miner, which led to his untimely death. It was typical of Holmes, as of the average miner, that his deeds of heroism were not of the spectacular type that are performed before the multitude and bring forth the spontaneous plaudits of the people. Rather, like the miner, his heroic

work was done under the commonplace of duty—plain, prosaic duty. The peculiar thing, the notable thing, is that the miner, when he performs something that the world later says is heroic, does it under the simple urge of duty, with the sole purpose of trying to save life. Heroism of this character is of the very highest and purest type.

"It has seemed singular to me that the only heroism that is officially recognized in times of peace by the United States Government through the award of honor medals is the saving of life from the perils of the sea. According to the statutes, the Secretary of the Treasury is directed to cause to be prepared medals of honor, with suitable devices to be distinguished as life-saving medals, which shall be bestowed upon any persons who shall endanger their own lives in saving or endeavoring to save lives from the perils of the sea within the United States or upon any American vessel. No one would decry this recognition given to the men of the sea; it is the wholesome, pleasing, worthy act of our beneficent Government. But I am very glad that, in the absence of Government recognition of acts of bravery in the mining industry, we do have such an agency as the Joseph A. Holmes Safety Association, with its public award of medals for deeds of heroism by the men who go down in the mines. For no man is braver in time of need, or more willing to risk his life to save the life of another, than the miner, and in time of a mine disaster it is never a question of who will volunteer to enter the zone of death. Such is the eagerness to respond that it often becomes the stern duty of some cool-headed foreman or miner to hold back the men while a few are selected to conduct the rescue work in an efficient, orderly manner."

Awards for Heroism.

Actual presentation of the medals and diplomas was not made at Denver, but will take place later at the convenience of the recipients. The following awards were announced:

MICHAEL CONROY, Butte, Mont.; diploma and gold medal. On June 8, 1917, lost his life in the Speculator Shaft of the North Butte Mining Co., in company with Peter Sheridan, in an effort to rescue men in the 2200-foot level who were imprisoned by a mine fire. Nearest kin: Mrs. Catherine Conroy, wife, Mace Middle, Claremorris, County Mayo, Ireland; Mrs. P. J. Jordan, sister, 419 Watson avenue, Butte, Mont.

PETER SHERIDAN, Butte, Mont.; diploma and gold medal. On June 8, 1917, lost his life in the Speculator Shaft of the North Butte Mining Co., in company with Michael Conroy, in an effort to rescue men in the 2200-foot

level who were imprisoned by a mine fire. Nearest kin: Mrs. Sarah Sheridan, wife, The Square, Newtonhamilton, County Armagh, Ireland.

JAMES D. MOORE, Butte, Mont.; diploma and gold medal. On June 8, 1917, lost his life in the Speculator Shaft of the North Butte Mining Co. by suffocation from gases from a mine fire, after having directed the construction of a barricade that was responsible for saving the lives of eight miners. Nearest kin: Mrs. Amelia E. Moore, wife, Sequayah Country Club, Station G, Oakland, Cal.

DANIEL BEONDICH, Biwabik, Minn.; diploma and gold medal. On February 1, 1919, a fire occurred in the Belgrade mine (iron ore) of the Balkan Mining Co., in which one life was lost and the lives of many others were in great danger. Three separate times Beondich ran a motor into the smoke and gases and brought helpless men to places of safety, and later came to the surface and descended the timber shaft and rescued a miner made helpless by the gases from the fire.

JAMES COLLINS, Mullan, Idaho; diploma and gold medal. On November 21, 1919, in company with Jacob Delmarh, was imprisoned for 15½ hours by a cave-in, while engaged in the hazardous work of opening an abandoned raise in the No. 6 Northwest stope in the mine of the Gold Hunter Mining & Smelting Co., in an effort to rescue Peter F. Grant and Emil Sayko, who had been imprisoned by a cave-in in the stope on November 15, 1919. Grant and Sayko were rescued after being entombed 14 days 4½ hours.

JACOB DELMARH, Mullan, Idaho; diploma and gold medal. On November 21, 1919, in company with James Collins, was imprisoned for 15½ hours by a cave-in, while engaged in the hazardous work of opening an abandoned raise in the No. 6 Northwest stope in the mine of the Gold Hunter Mining & Smelting Co., in an effort to rescue Peter F. Grant and Emil Sayko, who had been imprisoned by a cave-in in the stope on November 15, 1919. Grant and Sayko were rescued after being entombed 14 days 4½ hours.

JOHN LATSON BOARDMAN, Butte, Mont.; diploma and gold medal. On February 28, 1917, during a fire in the West Colusa mine, a party of six men attempted to descend from the 900 to the 1000-foot level to assist a surveyor who had been affected by the gases. Before reaching the surveyor, the party encountered gases and one was overcome. The remainder of the party being affected, tied their companion with a rope to prevent his falling, and climbed to the 900-foot level. Mr. Boardman arrived on the scene and assisted three of the party to a safe place and returned to the raise and descended, and with a rope and the assistance of an unknown man raised the unconscious man to the level above, and when in fresh air revived him.

HONORS DIVIDED BETWEEN TEAMS FROM EAST AND WEST.

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can, instructor of Pennsylvania State College; E. L. Flinn, safety-inspector of the Republic Iron & Steel Co.; Byron D. Shove, safety inspector of the Oliver Mining Co., and Jesse H. Rogers of the Associated Companies, Pittsburg, Kans.

Three technical problems were submitted to the contestants. In Problem No. 1 a rescue crew was bringing a body from a fire or explosion area. One member of the crew, while in irrespirable air, fell and rendered himself unable to travel farther. His mouthpiece remained in place. His removal was required. Problem No. 2 consisted of having the full teams spend five minutes in a smoke gallery containing formaldehyde fumes, after which their pulses were examined. Problem No. 3 consisted of removing an unconscious but gasping miner from a mine in which a fire had occurred. In addition to taking part in the solution of these problems, each team member was examined and quizzed as to the adjustment of his apparatus, demerits being charged for failure to name safety tests, for improper adjustment of apparatus and for inability to answer questions promptly.

Winners were: First, H. C. Frick Coke Co., Leisenring, Pa.; second, Wadge mine of the Victor American Fuel Co.; third, Homestake Mining Co., Lead, S. D.

First-Aid Contest.

Sixty-eight teams from all parts of the United States, Canada and Mexico actually participated in the first-aid contests. The stockyard stadium was transferred into an army hospital, where the various teams, with forty doctors, administered imaginary first-aid treatment to hypothetical wounds in the eye, arms, leg and other parts of the anatomy, and to men supposed to be suffering from gas, powder smoke and other troubles met with in metal and coal mines. For every little departure from the 100 per cent. correct way of doing what had to be done, demerits were given.

Winners were as follows: First, New River Coal Co., Scarbro, Pa., mine; second, St. Louis, Rocky Mountain & Pacific Coal Co., Raton, N. M.; third, DeBardeleben Coal Co., Sipsey, Alabama.

MEXICO RELIED UPON TO MEET AMERICA'S OIL NEEDS

Mexico offers the greatest promise for replenishment of America's oil supply, according to a report just issued by the Department of Commerce. The Department emphasizes the continued heavy demand since the war, saying the fact that the United States produces two-thirds of the world's supply should be considered with the circumstance that 40 per cent. of American producing wells have become exhausted, that the domestic market more than exceeds domestic output, and that the domestic supply will probably be exhausted in twenty or twenty-five years.

Production Capacity Greater.

The Department estimated that Mexican wells are capable of producing from 1,500,000 to 1,900,000 barrels of oil daily, but at present only 12 per cent. of capacity is being produced. Full production has been hindered by lack of transportation and storage facilities, unwise legislation and political conditions.

Tracing the history of Mexican oil developments, the report refers to failures of Mexican explorers and the beginning of the oil industry in Mexico in 1900 by American oil men, E. L. Doheny and C. A. Canfield, who purchased land near the Vera Cruz boundary, producing 50 barrels a day in two weeks.

The Department predicts that petroleum fields of greater importance than those now known will yet be discovered in Mexico, referring to a report of the Mexican Government of an oil area in the Gulf Coast States of 80,000,000 acres, on the Pacific of 50,000,000 acres and in Lower California of 18,000,000 acres, a total of 230,000 square miles. Possibilities of further development are indicated by the fact that at present the combined area of the fields now being exploited in Mexico does not exceed 800 square miles.

American Companies Lead.

Of the total of investments in oil in Mexico, 97 per cent. is held by foreigners. In the United States only 4 per cent. of oil investments are held by foreigners. In 1918, 27 companies in Mexico were producing oil in commercial quantities—17 American, 5 Spanish-Mexican, 3 Dutch and 2 British. In 1918 American interests produced 73 per cent. of the oil output of Mexico, British 21 per cent., Holland 4 per cent. and Spanish-Mexican 2 per cent. Of exports, Americans handled 79 per cent. and British the remainder.

On November 1, 1919, there were 1056 oil wells in Mexico. Of the 305 producing wells, with a possible capacity of 1,600,000 barrels per day, 200 are owned and operated by American capital.

REDUCTION OF TAXES IMPROBABLE IN REVISION OF REVENUE LAWS

By ROBT. G. WILSON

Chief of the Tax Division of The American Mining Congress.

Despite popular expectancy, downward revision of Federal taxes is not to be a concomitant of revision of the tax laws.

A material reduction in the volume of the burden is an improbability for the next several years. However unwelcome the conclusion, there is neither virtue nor advantage in further deferring acknowledgment of fact. A condition, and not a theory, again confronts the Government.

The elimination of the excess profits tax, with further loss from correction of the most flagrant injustices excited by the present income tax, requires that an equivalent amount of revenue be provided otherwise. The fiscal necessities of the Government unfortunately admit of small hope for an early decrease in the income realizable under the existing system.

A period of readjustment, which is more appropriately descriptive of domestic affairs in the present instance than "reconstruction," is the inevitable aftermath of war. Readjustment, following the industrial abnormality and mental hysteria of a great war, logically implies a gradual return to regularity of economic and social process, with contraction of unproductive expenditure and lowering of costs, including those of government. The popular assumption that a reduction of war taxes should follow two years of peace is orderly and fair, but unfortunately exigency is sometimes a higher law than logic.

The facts are rather conclusive. Necessity knows no law save that of compliance. Further long-term borrowing is unthinkable in view of the interest rate demanded in the present market, and short-term notes would prove but a costly and temporary postponement of the inevitable. There is presented only taxation as a lesser evil than confiscation, the honest name of capital levy. But why the necessity for peace-time taxation in the magnitude of \$5,000,000,000—\$50 per capita?

The Cost of Government.

Before concluding the last session Congress appropriated a total of \$4,859,890,327.30 to meet the estimated charges for maintenance of the Government during the fiscal year beginning July 1, 1920, including \$980,000,000 interest on the public debt. The aggregate has been approximately grouped by the chairman of the Committee on Appropriations as follows:

Appropriations incident mainly to past wars	\$2,838,118,400
Appropriations incident to present national defense.....	\$55,956,963
Appropriations incident to civil functions of Government.....	979,319,916
Deficiency appropriations.....	186,495,048
Total	\$4,859,890,327

The Government collected \$5,410,284,874 in taxes during the fiscal year ended June 30 last, but while it is conjectural to what extent tax revenue will be automatically de-

creased by economic changes during the current year, it is improbable that it will much exceed \$5,000,000,000, even should the existing laws endure. It has been estimated that without change in the present system the total Federal receipts for the year ending June 30, 1921, would reach about \$5,470,000,000 from all sources, subdivided as follows:

Income tax, individuals.....	\$1,300,000,000
Income tax, corporations.....	550,000,000
Excess-profits tax.....	1,000,000,000
Other internal revenue taxes.....	1,350,000,000
Customs	360,000,000
Postal revenues.....	460,000,000
Miscellaneous revenue, including salvage of war materials, etc.....	450,000,000
Total	\$5,470,000,000

The foregoing supports the reasonable expectation that even with additional governmental expenditures during the current year to be provided by the inevitable deficiency appropriations, the total fiscal transactions will result in a surplus.

However, any excess receipts over disbursements for the current year will not prove any too ample for accretions to sinking funds, which should be provided against the retirement of the floating public debt. The current obligations, while materially reduced during the last year, are still of large and costly proportions.

Huge National Debt.

The total national debt is now approximately \$24,100,000,000, of which about \$2,350,000,000 consists of floating indebtedness represented by Treasury certificates issued at an interest rate of from $5\frac{1}{2}$ per cent. to 6 per cent.

A statement obtained from the Treasury at the end of September indicates a net foreign allied debt to the United States at the present time of approximately \$9,430,000,000, after allowance for unwithdrawn balances and other charges against the credits originally established. These foreign loans, which are virtually all formally payable upon demand, carry a total annual interest charge of close to a half billion dollars. Unfortunately, however, payments are far in arrears, and international negotiations are now pending which will probably result in deferment

of interest settlements entirely or in largest part for three years, as well as probably indefinite postponement of reduction of principal. It is evident, therefore, that in preparing a national tax budget little dependence can be placed upon relief from across the waters. The United States must continue to carry with its war cross a part of the fiscal burdens assumed by its allies.

The problem of the floating indebtedness does not seem to present an alternative to simple extinction by sinking fund accumulations within the next three years. An analysis of sound fiscal policies must reject any consideration of further postponement of the current obligations, which could only be attempted by a funding procedure under most adverse, if not impossible, conditions.

Any measures taken within the next year or two to fund a substantial portion of the floating debt at a reasonable interest rate would probably prove a failure, in view of the present market prices of Government bonds, even were it possible to effect the necessary selling organization and arouse the public enthusiasm which attended the Liberty Loan campaigns. Further bond issues at the present time, even if they could be disposed of, would necessarily have a drastic effect upon the market quotations of the existing issues, regardless of interest rates or supplementary tax-free and other inducements. Perhaps a moderate national bond issue could be floated with an interest rate of from 5 per cent. to $5\frac{1}{2}$ per cent., but even ignoring the effect upon the market for the preceding and larger issues, such action would prove utterly unsound and should not be seriously considered in view of the fact that it would mean but a costly deferment for a long period of a distinct obligation that ultimately must be met.

Economic Effect of Bonds.

These, however, are not the only or chief considerations. One of the primary aims of the forthcoming revision of the tax laws will be to accomplish not only a more equitable distribution of the tax burden, but to eliminate as far as possible its influence in preventing the flow of additional capital now so essential for industrial progress and development. It should be one of the funda-

mental objectives of government to increase the availability of means for economic progress, and improve opportunities rather than diminish the livelihood of capital and the collateral interests of labor.

Even eliminating proper consideration of the economic and social effect of failure to reduce the national indebtedness, and particularly the costly unbonded obligations, there is an important practical objection to the continued short-term borrowings on the part of the Treasury. In 1923 more than \$4,240,000,000 of Victory notes mature, together with upward of \$1,000,000,000 of War Savings securities, or a total maturity problem involving liquidation in excess of \$5,000,000,000.

While it appears unavoidable that a material decrease in the volume of Federal taxation cannot be effected for at least several years, it is, on the other hand, unjust that two years and more after cessation of hostilities taxpayers should be submitted to an increase of the already excessive tax burden, so that any addition to the sinking fund accumulations provided by surplus of present revenues over expenditures is not a likelihood. Further, there is a saturation point in all taxation beyond which the productivity of revenue laws is subject to almost automatic diminution. We cannot, therefore, escape the assumption that at least a large part of the obligations maturing in 1923 must be refunded. It will probably prove a difficult undertaking, and it will be well if in the meantime the floating obligations are eliminated.

No Provision for Contingencies.

The foregoing presentation of elementary facts is without consideration of additional burdens which probably will accrue from the Transportation Act. There is, further, always the possibility of a turn in world events that would necessitate national armament beyond the normal program, and other contingencies. New problems born of dire necessity have a rather providential habit of lending themselves to successful solution by one means or another, as we have learned from the unprecedented success of the Liberty Loan campaign, but we shall all have more of the unquestioning faith in the ability of the future to take care of itself if every opportunity is availed of at the present time to effect some reduction of our \$240 per capita national debt, to say nothing of the rather alarming increase in State and municipal bond burdens.

This is the day of profound economic change. Its effect upon the productivity of the existing revenue machinery is not to be

ignored. With the prospective advance of the purchasing power of the dollar as the process of deflation continues, the volume of income taxes as well as excess profits taxes will automatically diminish. It is impossible, of course, to forecast the rapidity with which the dollar will regain its lost purchasing power, and consequently it is impossible to establish the degree of shrinkage in the income based on present statutes. It is certain, however, despite the conjecture as to the proportionate effect of the ultimate result of the economic change, that a mere refinement and lubrication of the revenue machinery will not alone suffice.

Any betterment in general economic conditions will have, of course, a practically instant effect upon trade and commerce, but the influence upon governmental expenditures will necessarily be projected in varying degree into the future, owing largely to the fixed nature of the commitments necessarily contracted in advance. There is to be a ratio, positive in ultimate effect but conjectural in the time of influence, of declining basic sources of revenue to the volume of governmental expenditures. Provision must be made against the delay in arrival to the Government of purchasing advantages which are now beginning to accrue to the public. It is true also that some of the important governmental commitments will not be affected in any degree by economic changes, notably the \$980,000,000 fixed interest charge upon the bonded debt, and sinking fund requirements.

Retrenchment in Expenditures.

As one economist has put it, "the compulsory character of taxation is so generally emphasized that most persons lost sight of the fact that, considered from another standpoint, the tax is a payment by the citizen for numerous and important benefits conferred upon him by the State." Life, liberty and the pursuit of happiness are concessions costly to maintain, but priceless in the possession.

The benefits the state of democracy is able to confer upon the taxpayer are worth \$50 per capita, but true democracy must exact efficiency and constrained costs of administration lest it lose many of the very benefits won in the rebellion against the oppressive taxation by autocracy. The Government, as well as the public, has an obligation to meet and a duty to perform. It in turn should be taxed—taxed with the responsibility to reform archaic methods of doing business.

A majority of the present governmental commitments is more or less fixed and not susceptible to appreciable reduction, but there are many opportunities for economy in the appropriations and expenditures for sundry civil items of maintenance and improvement. The institution of a true budget system, the

exercise of a little more care in planning the disbursement of the public funds and the methods of carrying out the functions of the Government, a little less pork in the barrel, will go a long way toward insuring a less grumbling attitude on the part of the taxpayer.

Retrenchment there will be, whatever the inspiration and extent, and it will be needed in full to offset the natural shrinkage in revenue that inevitably results from large dependence upon taxation of profits in a period of deflation.

The heritage of war is only fully comprehended in the cold light of the aftermath. The convalescing period must hold dangers and tribulations of its own. Alleviation of the confusion and inequities engendered by the present system of taxation is a problem of importance, one that is fraught with increasing difficulties. But the problem of fairly allocating to the present and succeeding years the direct and indirect war costs, and at the same time preserving a practical and businesslike fiscal policy, is another that apparently permits of solution only by intelligent understanding and courageous co-operation between the Government and the taxpayer.

Income Tax Too Ambitious.

Elimination of the excess profits tax and substitution of a device to provide an equivalent amount of revenue are not the only tasks to be faced by Congress. The income tax, while fundamentally sound and amenable to equitable administration if its functions are not overburdened, now works many compound fractures of common justice and economic laws. Unfortunately, its modification will in practically every instance effect a reduction of the revenue which would be provided in the present form, overloaded as it is with profligate but arbitrarily assumed premises of tax liability. The sudden emergencies of war forced toleration of many inequities, but mere expediency cannot alone carry much weight in the devising of peace-time tax codes that are expected to stand unchanged for at least a few years. Refinement of the income tax therefore becomes a problem not incomparable in many of its phases with that of finding a substitute for the excess profits tax.

Considerable complaint is heard ament the burden of the surtaxes. It is not, however, with any sentimental consideration for the wealthy in their opposition to the higher brackets of the graduated personal taxes that recognition is being taken of the advisability of reducing the rates or otherwise providing relief. Individual wealth, upon the unrestricted flow of which progress and development so essentially depend, has found increasing sanctuary in municipal and other

tax-free investments encouraging wasteful expenditures and ill-timed community luxuries. The economic effect of this diversion of funds required for healthy industrial expansion and concomitant contraction of high living costs is assuming alarming proportions. Further, the higher surtaxes are in themselves proving self-defeating in that revenue dependence is placed upon sources which are gradually disappearing. Important practical objections to further postponement of tax-law revision, from the governmental standpoint alone, appear at every turn. Adequacy, the prime determinant of a tax device, fails in the instance. It is in a way rather fortunate, perhaps, that the urgent need for tax reform is more and more involving considerations of mutual concern to taxpayer and Government.

Productive industry is suffering to an unhealthy degree as a result of the impossibility of obtaining new capital in competition with the offerings of States and municipalities, except at usurious rates. The mortgage market is disappearing and the housing difficulties increasing. Credits are strained, initiative discouraged and enterprise, the lifeblood of progress, aborted. New sources of revenue, essential to an adequate tax program, are failing to materialize. The incentive to risk in the hope of substantial gain is diminished by the necessity of including the Government as a major partner in profit without liability in event of loss. The economic delinquency of excessive taxation has become an established blockade to the normal expansion of industry.

Proposed Relief.

If measures can be presented to remedy the inimical conditions provoked by the higher surtaxes upon personal incomes, avoiding inequitable compensatory taxes, Congress should prove receptive. The following recommendation will be submitted by one of the largest organizations now engaged in the study of the subject:

Saved and reinvested income of an individual to be deemed to be at the top of his net income, but the surtax rates ordinarily applicable to such portion of his income (if in excess of 20 per cent.) to be reduced to 20 per cent.

The reduction in the present revenue of from \$200,000,000 to \$250,000,000 will eventually be more than compensated by the increased earnings upon which the tax income is based, resulting from an industrial expansion accelerated by the investments induced by the foregoing proposal.

We are accustomed perhaps to underestimate the inclination and ability of the wage-earning masses to comprehend the reaction

upon labor as well as capital of fundamentally unsound laws and economic practices, but we can have no pretense that the advantages to the public of the reduction of surtaxes will become generally appreciated immediately. However, the direct stimulus to thrift and saving cannot fail to operate as an appreciable influence upon reduction of the cost of living, by which the wage-earner will profit. Perhaps this contributive effect will never be identified as the result of larger exemption to wealth, but socialistic dogma is in fair way of being silenced if living costs decrease without loss of prosperity and without aggregate reduction of taxes.

The proposal for this optional relief from burdensome surtaxes has the support of the Treasury. Secretary Houston, in a communication to the House Committee on Ways and Means, offered the opinion that "it is important that the methods of taxation employed should in all cases penalize saving and investment as little as possible. Our present surtaxes offend greatly in this respect. We attempt to levy surtaxes rising to 65 per cent. upon ordinary income, while there are thousands of millions of tax-free securities in the market, the income from which is practically exempt from all taxation. The result is to make investment by wealthier taxpayers in the expansion of industry or foreign trade unattractive and unprofitable. It is obvious that this situation should be remedied.

"The remedy which most commends itself to my judgment at the present time is to reduce surtaxes attributable to that part of the net income which is saved and reinvested in business or property yielding taxable income and at the same time to limit the total amount of such reduced surtaxes to the same percentage of the reinvested income as a rate imposed upon the undistributed profits of corporations.

"The revenue lost by such an amendment could, if necessary, be made up by increasing the normal tax or that portion of the surtaxes attributable to income spent for purposes of consumption. But the time is fast approaching when the adoption of such an amendment would cause little real reduction of the revenue. We cannot long continue to collect surtaxes rising to 65 per cent. upon income from ordinary business and investment while exempt interest at a remunerative rate can easily be secured from tax-free bonds. We must take something less than 65 per cent. or in the end take nothing."

Restrictions and Complications.

Remedially constructive as this contemplated amendment would prove, its application is, of course, confined. The thousands of

millions of dollars now resting in tax-exempt securities will, of course, retain the absorbed capital, and the interest thereon will remain free from tax. It is true that the proposal will have a direct tendency to divert Federal, State and municipal bonds from personal possession to trust funds, etc., but the transition period will necessarily be lengthy. Further, the advantage of the amendment will only appear to those subjected to surtaxes in excess of the 20 per cent. rate.

In fact, the relief to the taxpayer will partake somewhat of the nature of an option in that upon him will rest the burden of proof of saving and reinvesting, with inevitable complications arising from categorical definitions, or lack of definitions, of the many forms of saved and reinvested income. However, the impression steadily grows that not only is simplicity not an accompaniment of equitable and sound taxation, but that complexity increases almost in direct ratio to the evolution of higher principles. We can but repeat the admonition that the terms "simple" and "equitable" in the actual practice of collecting taxes are found to be contradictory.

The exemption from Federal taxation of State and municipal bonds arises entirely from judicial interpretation of the Constitution, not from principles of taxation or the desire of lawmakers. As a matter of fact, its result is a denial of the premise that unearned income should bear a heavier tax than earned income.

Soon after the Supreme Court declared stock dividends non-taxable as income, a bill was introduced in Congress to impose a special excise tax upon such distributions. Cannot means be devised to reach the income from State and municipal issues? The stock dividend case involved highly technical distinctions between capital and income, with several justices dissenting from the opinion, but surely there can be no question as to the nature of interest and, open-mindedly, its ethical susceptibility to taxation.

The suggestion has been made that the optional character of the proposed relief from higher surtaxes should be extended; that as a prerequisite of the reinvested income exemption the taxpayer shall include in the return of all income the interest received from ownership of State and municipal securities. While there may be some question as to the legality of this device, it is fundamentally sound in theory at least, and the fact that it does not become mandatory, but merely operates at the option of the taxpayer to give him a larger net benefit, recommends it to serious consideration.

MINES FURNISH 52 PER CENT. OF CAR-LOT REVENUE FREIGHT

American mines provided 52 per cent. of all revenue freight carried by Class I railroads in carload lots during January, February and March, 1920.

Base bullion, ores, coal, coke, crude oil and other raw products of the mines furnished 52 per cent. of all car-load tonnage, or 255,114,086 tons of the total 488,774,405 tons of carload freight carried. Refined petroleum and commodities manufactured exclusively out of metals made up an additional 43,855,196 tons. The grand aggregate of raw and manufactured mine products transported was 298,969,282 tons, or 61 per cent. of all revenue freight.

In addition to the car-load tonnage, Class I roads carried 22,925,096 tons in L.C.L. lots, making 511,699,501 tons the total of all revenue freight. Calculations in this article are based entirely on carload freight because the total of L.C.L. shipments was comparatively small and because the Commission has treated all L.C.L. freight as a separate classification.

The summary of freight commodity statistics of Class I roads for the quarter ended March 31 is the most exhaustive one ever prepared by the Interstate Commerce Commission. It is the first one made under the Commission's order of December 1, 1919, prescribing a new classification of commodities and requiring quarterly reports. The summary analyzes by classes of commodities the tons and numbers of carloads carried by Class I roads, which roads in 1919 carried 91.8 per cent. of the total tonnage originating on all roads, exclusive of switching and terminal companies. In former summaries of revenue tonnage the analysis included only 38 classes of commodities, but the present one deals with 70.

In its analysis the Commission makes use of six classifications, of which four are groupings of related commodities, one is devoted to manufactures and miscellaneous articles and another is used for all merchandise shipped in less than carload quantities. The first four groupings, each carrying its necessary subclassifications, are used for products of agriculture, products of animals, products of mines and products of forests. Figures of carload freight coming within the subclassifications of each of the five major groupings are given for the United States as a whole and also by districts, the districts being the Eastern, the Pocahontas, the Southern and the Western.

The Commission's figures on "products of mines," which include only the raw mine products, but which cover 52 per cent. of all car-load revenue freight tonnage, follow:

UNITED STATES.					
Products.	Cars.	Tons.	Products.	Cars.	Tons.
Anthracite coal.....	639,894	30,374,635	Iron ore.....	80,974	4,449,344
Bituminous coal.....	3,399,164	166,016,366	Other ores and concentrates....	25,394	1,092,944
Coke	341,816	12,197,243	Base bullion and matte.....	5,598	219,624
Iron ore.....	139,090	7,365,047	Clay, gravel, sand and stone....	238,225	11,210,442
Other ores and concentrates....	152,449	7,455,294	Crude petroleum.....	7,034	207,667
Base bullion and matte.....	16,018	660,515	Asphaltum	9,034	274,792
Clay, gravel, sand and stone....	484,554	22,148,692	Salt	26,131	827,015
Crude petroleum.....	89,790	3,639,398	Other products of mines.....	18,064	653,256
Asphaltum	18,586	609,352			
Salt	57,687	1,767,279	Totals.....	3,261,019	158,171,828
Other products of mines.....	89,116	3,114,086			
Totals.....	5,428,164	255,114,086			
EASTERN DISTRICT.			POCAHONTAS DISTRICT.		
Products.	Cars.	Tons.	Products.	Cars.	Tons.
Anthracite coal.....	605,310	29,137,711	Anthracite coal.....	1,443	50,487
Bituminous coal.....	1,981,182	100,459,698	Bituminous coal.....	283,345	15,184,856
Coke	264,064	9,639,423	Coke	13,971	525,570
			Iron ore.....	5,792	290,609
			Other ores and concentrates....	566	23,334
			Base bullion and matte.....	115	4,588
			Clay, gravel and stone.....	14,233	787,282
			Crude petroleum.....	332	11,412
			Asphaltum	211	5,716

Salt	1,218	39,183
Other products.....	1,673	54,972
Totals.....	322,899	16,918,009

SOUTHERN DISTRICT.

Products.	Cars.	Tons.
Anthracite coal	1,565	64,510
Bituminous coal	410,931	19,236,453
Coke	24,363	863,061
Iron ore	23,559	1,520,977
Other ores and concentrates.....	4,213	173,812
Base bullion and matte.....	114	3,616
Clay, gravel and stone.....	73,965	3,041,404
Crude petroleum	6,230	181,202
Asphaltum	2,577	90,346
Salt	7,500	232,569
Other products	35,200	1,363,030
Total.....	596,208	26,700,920

WESTERN DISTRICT.

Products.	Cars.	Tons.
Anthracite coal	31,576	1,121,987
Bituminous coal	723,706	31,145,359
Coke	39,418	1,229,247
Iron ore	22,774	1,165,117
Other ores and concentrates.....	122,276	6,165,204
Base bullion and matte.....	10,191	432,687
Clay, gravel and stone.....	158,131	7,169,534
Crude petroleum	76,194	2,633,117
Asphaltum	6,764	238,588
Salt	22,838	668,512
Other products	34,179	1,407,977
Total.....	1,248,047	53,323,329

Figures for metal products listed by the commission under "Manufactures and Miscellaneous," amounting to 9 per cent. of the nation's total carload freight, follow:

UNITED STATES.

Products.	Cars.	Tons.
Refined petroleum and its products	465,856	12,582,578
Iron, pig and bloom.....	179,891	8,062,423
Rails and fastenings.....	26,924	1,461,283
Bar and sheet iron, structural iron and iron pipe.....	393,212	13,800,320
Other metals, pig, bar and sheet	84,624	3,086,422
Casting, machinery and boilers.....	201,559	4,468,270
Total.....	1,362,057	43,855,196

EASTERN DISTRICT.

Products.	Cars.	Tons.
Refined petroleum and its products	175,324	4,740,422
Iron, pig and bloom.....	149,240	6,381,182
Rails and fastenings.....	21,294	862,257
Bar and sheet iron, structural iron and iron pipe.....	277,235	9,880,096
Other metals, pig, bar and sheet	60,552	2,191,779
Casting, machinery and boilers.....	138,898	3,256,421
Total.....	813,453	27,312,157

POCAHONTAS DISTRICT.

Products.	Cars.	Tons.
Refined petroleum and its products	4,503	121,852
Iron, pig and bloom.....	6,614	292,635
Rails and fastenings.....	1,408	50,993
Bar and sheet iron, structural iron and iron pipe.....	6,341	197,238
Other metals, pig, bar and sheet	1,238	43,467
Casting, machinery and boilers.....	2,952	59,292
Total.....	23,356	765,387

SOUTHERN DISTRICT.

Products.	Cars.	Tons.
Refined petroleum and its products	47,969	1,265,173
Iron, pig and bloom.....	16,148	638,181
Rails and fastenings.....	5,166	186,731
Bar and sheet iron, structural iron and iron pipe.....	22,348	654,933
Other metals, pig, bar and sheet	2,805	90,847
Casting, machinery and boilers.....	14,046	253,842
Total.....	108,572	3,083,707

WESTERN DISTRICT.

Products.	Cars.	Tons.
Refined petroleum and its products	237,760	6,855,131
Iron, pig and bloom.....	16,889	750,425
Rails and fastenings.....	9,146	361,392
Bar and sheet iron, structural iron and iron pipe.....	87,288	3,067,953
Other metals, pig, bar and sheet	19,939	754,329
Casting, machinery and boilers.....	45,654	898,715
Total.....	416,676	12,687,945

Revenue freight carried by Class 1 roads during the first quarter is classified by the commission as follows: Products of mines (not including refined petroleum and manufactured metal products), 255,114,086 tons; manufactures and miscellaneous (including refined petroleum and manufactured metal products), 115,763,372 tons; products of agriculture, 56,215,783 tons; products of forests, 50,062,393 tons; merchandise, including all commodities in less than carload lots, 22,925,096 tons; products of animals, 11,618,771 tons.

Revenue freight, all classes, carload and less than carload, moved by districts as follows: Eastern district, 275,831,150 tons; Pocahontas district, 22,355,272 tons; Southern district, 64,267,591 tons; Western district, 149,245,488 tons.

COLORADO MINERS LAUGH AT HIGH COST OF AUTOMOBILES

Practically 12 per cent. of the coal-mine employees of the Colorado Fuel & Iron Co. own automobiles. Out of 5000 such employees, 595 have managed to accumulate enough to support cars for use in their off-work hours. In nearly every mining community the C. F. & I. Co. has provided a garage for the machines of its employees, and in some of the larger towns two or three have been constructed. There are 418 stalls in these garages, and every one is occupied, while many employees who own automobiles cannot yet secure such company-owned facilities.

BRITISH GOLD SUPREMACY

By H. N. LAWRIE.

In an interview given out October 7 by Representative Louis T. McFadden, chairman of the Committee on Banking and Currency of the House of Representatives, he asked the following pertinent question with reference to the gold situation: "Is the United States to continue to ignore the problem of gold production, thus permitting the British Empire to gain an unquestioned supremacy?"

An estimate of the gold production of the United States based on the output for the first six months of this year indicates that the production for 1920 will be less than half the amount produced in 1915. In 1915 the United States produced 21.5 per cent. of the total world's gold output, and the British Empire 63.7 per cent. In 1919 the United States produced but 16.6 per cent. of the total world's output, while the British Empire produced in excess of two-thirds. Since July 24, 1919, the British Empire has been paying an exchange premium as high as 50 per cent. to the gold producers of South Africa, where the bulk of the British gold is produced, while in the United States no assistance has been rendered the gold-mining industry. This year the contribution of the United States to the gold production of the world will probably be not more than 12 per cent., about half of that which it contributed in 1915, while the stimulating effect of the exchange premium will probably increase the quota which the British Empire will contribute to 75 per cent.

As compared to 1914, the purchasing power of the dollar in terms of all commodities in 1919 was 47 cents. The gold producers' ounce in 1914 had a purchasing power of \$20.67, whereas during 1919 the same ounce could purchase in terms of all commodities but \$9.70. Since the price of gold is fixed by statute at \$20.67 an ounce, the gold producer is in the same position as a person who received the same income in 1919 as in 1914 and finds that a \$2000 income has shrunk in purchasing power to \$970." This is the principal reason for the decline of the gold production of the United States from \$101,000,000 in 1915, to less than \$50,000,000 this year," said Mr. McFadden.

Gold Stock Depleted.

The United States Mint sold for industrial consumption during 1919 nearly \$22,000,000 more gold than was produced from the mines of the United States, while this year the drain on the monetary gold stock will probably be \$40,000,000. The American Bankers' Association passed a resolution on October 2, 1919, urging upon the Government the necessity for maintaining a domestic production of new gold in sufficient volume to satisfy the industrial requirements of the arts and trades. To comply with the specifications of this resolution, the soundness of which cannot be questioned, Mr. McFadden introduced H. R. 13201 on March 22, 1920.

Consumers Now Subsidized.

Since the industrial consumers of gold are the only ones in the country receiving raw material at the pre-war price, while the general increase in all commodities was 112 per cent. in 1919 as compared with 1914, it is evident that they are being heavily subsidized. Mr. McFadden emphasizes that the imposition of this excise tax merely adjusts the cost and price equation between the producer of new gold and the consumer of gold in the industrial arts, and is free from all monetary entanglements. A free gold market is maintained under the provisions of this bill for the reason that the excise tax is collected on the finished product as sold, and not upon the bullion which is sold to

the manufacturers. There is nothing in the bill which in any way alters the number of grains in the standard dollar, the unit of our monetary system. The bill creates the Governmental machinery by which the consumer of gold in industrial arts may pay more nearly the cost of production for his raw material. The stimulus to the gold producer specified in this bill is equal to the excise tax imposed, and is no greater than the exchange premium paid by Great Britain in the latter part of 1919 to the South African producer, whose operating conditions are still more favorable than those in the United States.

Heavy French Tax.

In addition to paying the exchange discount, which in the case of the French consumer of gold would amount to 100 per cent. more in francs than the price paid before the war, the French Government has imposed a sumptuary tax for the use of gold in the fabrication of articles (other than money) of 60 francs per hectogram (\$3.73 per fine ounce) by law of June 25, 1920. Previous to that date the guarantee tax was 37 francs, 50 centimes per hectogram. The French Government* justifies this tax in a formal document transmitted by the United States Bureau of Foreign and Domestic Commerce as follows: "Moreover, this tax, striking as

it does luxury goods, or unessential articles, enters into the category of a sumptuary tax, the levying of which is admitted by all economists as a legitimate procedure."

Gold Standard Protected.

It is important that the gold-mining industry be kept alive for fear that with greatly reduced production there will be difficulty in retaining the gold standard during a popular campaign for credit restriction accompanied by declining prices. The continued depletion of the gold stock by excess exportation and industrial use will seriously impair the public confidence in the nation's finance and currency unless a normal gold output is insured.

Waste Makes Want.

The gold-mining industry will be completely shut down unless constructive aid is provided without delay, in which event it will take years to develop a normal output of gold at a very much greater expense. To allow the gold mines of the United States to cave in and fill with water entails a waste of developed gold resources which, in a most critical hour of financial need, will cause want. No argument can be made in favor of waste. The time to act is now before the industry is shut down.

ALL-AMERICAN ROUTE FROM LAKES TO SEA IS PROPOSED

Following the publication in the August MINING CONGRESS JOURNAL of an article relating to the possible development of hydro-electric power through the canalization and deepening of the St. Lawrence River to the sea, considerable discussion was aroused on the subject. Attention has been called to the fact that one of the applications for preliminary development license filed with the Federal Power Commission was that of Millard F. Bowen and associates, who propose both to construct a 30-foot waterway from Lake Erie to Lake Ontario to the Hudson River at Albany, and to develop approximately 1,400,000 hydro-electric horse-power. Mr. Bowen states that the money for bearing all the expense of this gigantic project is already as-

sured; that the entire water route will be operated under Government control permanently without tolls, and that the beginning of work awaits only the issuance of a license by the Federal Power Commission or the granting of a charter by the Congress of the United States.

The proposed development would be entirely upon American territory. Twenty years ago a board of engineers, consisting of Messrs. Raymond, Noble and Wisner, made an investigation and reported it was entirely feasible to build a 30-foot channel from the Great Lakes to tidewater in the Hudson River below Albany, wide enough to permit of a speed of 10 miles an hour each way. Previous to that, or in 1896, the United States Deep Waterways

Commission had recommended that the proposed Niagara Ship Canal from Tonawanda to Olcott be constructed, but the possibility of developing hydro-electric power sufficient to cover all costs of the ship canal was not considered.

Under the plan of Mr. Bowen and his associates, the route of the canal would begin on Lake Erie at Lackawanna, south of Buffalo, and proceed to Lake Ontario at Olcott. Sufficient water for navigation purposes and for the development of 800,000 horse-power is obtainable under existing treaty rights. Lake Ontario would be the route from Olcott to a point east of Oswego, where a canal level starting 137 feet above the waters of the lake would convey ships a distance of 90 miles to Little Falls. The distance between Lake Ontario and the Hudson is 164 miles. Between Lake Oneida and Albany the New York State Canal would be used, but it would be deepened to 30 feet. Six hundred thousand horse-power would be developed from the use of all the waters between Lake Ontario and the Hudson River. About 90 streams from the Adirondacks and Catskills would be dammed for power development purposes.

Would Divide Surplus Profits.

In discussing the advantages of the all-American route over the St. Lawrence route, Mr. Bowen points out the fact that the proposed route would belong entirely to America and Americans. He believed, however, that both routes will be ultimately needed for transportation purposes, but adheres to the opinion that it would be the part of wisdom to develop the all-American route first. The cost of construction of the proposed route, according to Mr. Bowen's calculations, will be \$200 per horse-power. There will be sufficient inducement for his associates to construct the canal and locks and turn them over to the Government and depend for revenue entirely upon the sale of electricity. He and his associates plan even to make sufficient profit to divide with their employees, the Government and the State of New York. This contemplated arrangement is covered in Section 9 of their proposed charter, which reads as follows:

"After all necessary expenses of said corporation shall have been paid or provided for, together with adequate payments on a sinking fund for redemption of its bonds, the stockholders shall be entitled to receive an annual dividend of 10 per cent, on its paid-in capital stock, which dividend shall be cumulative. After such dividend claims shall have been fully met and sinking fund payments made, all the net earnings shall be annually divided into four equal parts; one part thereof shall be paid to the United States, one part thereof shall be paid to the State of New York, one

part thereof shall be divided equitably among the employees of said corporation who have earned wages therein for more than six months, other than officials, stockholders and superintendents, in proportion to their wages earned, and one part thereof shall be paid to the stockholders in proportion to their stockholdings, in addition to said dividend."

Another section of the charter provides that for the purpose of navigation the United States shall regulate the use of the canals and operate the locks, which shall at all times be under the control and direction of the Secretary of War. The corporation would be vested with the power of eminent domain, and the rights of corporations now securing water from Niagara Falls and of persons and companies entitled to the use of streams in the Adirondacks and the Catskills would be protected by the delivery to them of electric energy corresponding to the amounts which they may now be developing, or to which they may be entitled at the time the proposed charter is granted.

The charter will be presented to Congress, Mr. Bowen says, immediately upon the convening of the next session.

COLORADO FREIGHT RATES

Abrogation of increased freight rates, which threaten to cause the abandonment of many metal mines in Colorado, is sought by a committee appointed by the Colorado Metal Mining Association. The committee consists of former Governor Jesse F. McDonald, Leadville; M. A. Kuryla, Eureka; George E. Collins, manager of the Mary Murphy Gold Mining Co.; Timothy O'Conner of Boulder county; W. A. Passmore of Clear Creek county; George H. Stahl, manager of the Vindicator Gold Mining Co., and J. Courtellini of Leadville. Bulkeley Wells of Denver and George M. Taylor of Colorado Springs were named on a committee to co-operate with those interested in readjusting relations with the management of the Colorado School of Mines. The committee was authorized to add three others.

STANDARD GETS CONTRACT

The Standard Oil Co. of California was awarded the contract on September 23 for supplying oil requirements of Shipping Board vessels at Pacific Coast ports and Honolulu, deliveries to commence October 24 and continue one year. The total estimated requirements amount to 371,716 gallons of the contract value of \$195,808.30.

TAX TOPICS

Nation-wide interest in the Tax Conference to be held in Denver, Col., during the week beginning November 15, in connection with the annual convention of the American Mining Congress, indicates that the session will become one of the most important in the history of Federal taxation of the mining and oil industries.

Only a few formal papers will be presented. The program, this year, introduces round-table discussions, in which operators, engineers and tax authorities from all sections of the country will participate. These discussions will prove particularly valuable to those now confronted with the difficulties of arriving at satisfactory settlements with Federal and State authorities.

THE MINING CONGRESS JOURNAL is now warranted in announcing that among the probable participants in the Tax Conference will be J. C. Dick, Chief of the Subdivision of Natural Resources of the Bureau of Internal Revenue, Robert N. Miller, former Solicitor of Internal Revenue, and others of prominence.

Paul Armitage of New York has been appointed chairman of the Tax Committee which will direct the activities of the American Mining Congress Tax Conference. The committee further includes Dr. R. C. Allen, vice-president of the Lake Superior Iron Ore Association, Cleveland; Hon. A. Scott Thompson, Miami, Okla.; George E. Holmes, New York; A. P. Ramstedt, Wallace, Idaho; John C. Howard, Salt Lake City, and E. L. Doheny, Los Angeles Cal.

The Allied Tax Committee, appointed by the National Tax Conference in Chicago last April as a result of the joint efforts of the American Petroleum Institute, the National Industrial Conference Board and the American Mining Congress, will make its report to the Second National Industrial Tax Conference at the Hotel Astor, New York, October 22-23, 1920.

The committee has had constant contact with business conditions throughout the

country. In further view of the fact that its deliberations have been attended by the best thought and advice of some of the most prominent tax authorities, the report, which will be quite voluminous, is certain to attract widespread interest. It will form the basis for a general recommendation to Congress at the next session.

Mutually satisfactory settlement of every tax case in the Bureau of Internal Revenue would be a Utopian achievement that is impossible under complex laws, but the American Mining Congress and the taxpayers who have visited the industrial units of the Bureau have been impressed with the fair-minded attitude of the authorities in dealing with the vexatious problems of mine taxation. Assessments which result in exceptional hardships are usually due entirely to specific demands of the law which permit no exercise of discretion. Many of the administrative regulations and much of the departmental procedure give opportunities for the determination of absolute equity, although the burden of appeal and proof necessarily devolve upon the taxpayer.

The latter fact is one among several that impelled the American Mining Congress to establish a special Tax Division, which is now successfully functioning. Considerable assistance has been given to mining companies in presenting their problems to the Bureau, and correspondence is particularly invited from all officials struggling with the difficulties of valuation and computation of depletion.

Maintenance of the United States now demands five billion dollars per year—collected by the Bureau of Internal Revenue.

Collection of five billion dollars, largely self-assessed, inevitably means uncertainty and economic stress in the process under any tax law. The present code provokes genuine confusion that can only be ameliorated by co-operation between the taxpayer and the Government.

The American Mining Congress, acting as an unofficial intermediary, is striving to be of aid, both to the taxpayer and the Revenue Bureau, in solving the peculiar problems that inherently attach to the mineral industry.



By C. H. FARRELL.

Figures so far available at the Car Service Division of the American Railroad Association indicate that the carriers are gradually getting to where they will be able to handle traffic as was done in normal days. During August more revenue freight was loaded than during any previous August for which figures are available, the record being even larger than that of August during either of the war years. During the first part of September the indications were that traffic was falling off from the high peak of August, but it was about normal as compared with September of 1919 and 1918. The greatest worry the carriers face now is caused by the handling of the grain crop, and if business continues to decrease slightly it will be of material assistance to the railroads in getting the grain to the markets. For the week ending September 17 the accumulation on hand was 47,438 cars, as compared with 105,000 cars on March 1, when the Government ceased to operate the railroads. During April, when the outlaw strikes were at their height, the accumulation was 288,000 cars. It is quite evident that the carriers are making rapid progress and that the accumulation now on hand is about normal, half the number of cars in question being those loaded with export commodities awaiting vessels at the ports. The car shortage as of September 8 was 104,790 cars, which is below previous figures. In July of this year the carriers set as their goal the moving of cars 30 miles

per day with an average load of 30 tons per car. The latest figures available show that the cars are moving at the rate of about 26 miles per day and carrying an average load of 29 tons per car. Many of the carriers are loading and moving freight at the desired speed and load.

State Versus Interstate Rates.

The Commission's decision in increased rates has brought about a situation which will develop considerable interest and probably have a strong political bearing. The carriers filed with various State railroad and public utility commissions applications for authority to increase rates on the same basis as the Interstate Commerce Commission had allowed for interstate traffic. In nine different instances the State commissions have refused to allow the carriers to make advances in intrastate rates, and consequently the Commission has entered into separate investigations as to the situation in each one of these States. The rule laid down by the Supreme Court in the Shreveport case has been incorporated into and reinforced by the Transportation Act, and it will be the Commission's mission to determine whether or not the action of the State commissions in refusing these increases does, as a matter of fact, bring about an undue burden on interstate commerce. It is quite probable that the State commissions and their numerous followers will fight quite strenuously any attempt on the part of the Commission to regulate intrastate rates.

Labor.

The Commission is again considering the term "subordinate official" included in the

Transportation Act, with a view of deciding what classes of employees are included in that section of the law, and decision will also be made as to whether or not the regulations governing the making and offering of nominations for appointments as members of the labor group of the United States Railroad Labor Board shall, as a result of any modification that may be made in the list of subordinate officials, be modified or supplemented.

Loans.

From time to time announcement has been made of various loans made by the Government through the Interstate Commerce Commission to carriers out of the revolving fund provided in the Transportation Act. It is understood that certificates have already been issued for about one-third of the fund, but the Treasury Department has declined in nearly each instance to pay the amounts certified by the Commission because of a question as to what is meant by the law where it says "and that the applicant in the opinion of the Commission is unable to provide itself with the funds necessary for the aforesaid purposes from other sources." The Commission is considering the meaning of this language, and it is generally thought that the view which will prevail ultimately is that the Treasury Department is not authorized by the law to go back of the Commission's certificate, the matter of the applicant's inability to obtain money being one for the Commission's discretion. Some of the larger loans recently announced are: Erie Railroad Co., \$8,000,000; Seaboard Air Line, \$6,073,400; Terminal Railroad Association of St. Louis, \$896,925; Western Maryland Railway, \$1,372,800; Maine Central Railroad, \$653,000; Virginian Railway, \$2,000,000; Ann Arbor Railroad, \$250,000. In each instance the carrier has been required by the Commission to raise an amount privately as large or larger than the amount loaned by the Commission.

Car Service.

The coal situation throughout the country seems to be easing somewhat, and the order requiring priority to Tidewater for New England coal has been cancelled by the Commission. The order requiring priority to the Great Lakes is still in effect, but as navigation closes in the near future this order will automatically cease. The Commission, how-

ever, has renewed its orders regarding special handling of open-top equipment and the preference in loading coal for public utilities, etc. These orders now stand continued indefinitely from September 19. A new order has been issued, effective October 1, requiring the carriers to treat all cars placed for railroad fuel as assigned cars and not to assign such cars for their own fuel and fail to count them against the mine's distributive share unless the entire output of such mine is taken by the carrier in question for a period of not less than six consecutive months.

Open Top Storage Charges.

The Commission granted authority to the carriers to publish in their tariffs emergency penalty storage charges for detention of all open-top cars and all cars loaded with coal or coke. Several of the carriers authorized the publication of a storage charge of \$10 per car per day, and this publication, after being made by J. E. Fairbanks, agent for the carriers, was suspended by the Commission until it could investigate the reasonableness thereof. Meanwhile other carriers individually did file a similar penalty tariff, and these tariffs, in many instances, were allowed to go into effect and remained in effect for a short time until the carriers had an opportunity to cancel them out. It is thus evident that many carriers were obliged to collect this penalty charge, while others were prevented from collecting it by the Commission's suspension. In order to relieve that situation the Commission has now authorized all carriers who collected this charge to refund it to the shippers.

Express Rates.

The Commission considered the general needs of the American Railway Express Co., and, following the railroad advance, allowed the express companies an increase. Shortly thereafter the Railroad Labor Board awarded a substantial increase to the employees of the express companies, and a request was made of the Commission for an additional 15 per cent. increase in rates. The Commission has decided to allow the express company an additional 13.5 per cent. to take care of this advance in wages, making a total increase in express rates of 26 per cent.

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METALS, OIL, COAL BUSINESS

REVIEWED BY U. S. CHAMBER

Business in the metal lines and oil trade is good, and promises to continue satisfactory, along with activities in other branches of American industry, according to the monthly report of the Committee on Statistics and Standards of the United States Chamber of Commerce, made public at the end of September.

The report contains the following:

"In Wyoming and California the oil business is good, and it varies from fair to good throughout the entire country. Prices are high, production still keeps up, and there is a world-wide demand which seems difficult to

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

OF THE MINING CONGRESS JOURNAL, published monthly at Washington, D. C., for October 1, 1920. City of Washington, District of Columbia, { ss.:

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared E. Russell Coombes, who, having been duly sworn according to law, deposes and says that she is the business manager of THE MINING CONGRESS JOURNAL, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 433, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:
Name of Publisher—The American Mining Congress.

Postoffice address—Washington, D. C.

Officers:

Bulkeley Wells, President, Denver, Colo.
Harry L. Day, First Vice-President, Wallace, Idaho.
Daniel B. Wentz, Second Vice-President, Philadelphia, Pa.
E. L. Doheny, Third Vice-President, Los Angeles, California.

J. F. Callbreath, Secretary.

Editor—T. R. Moss.

Business Manager—E. Russell Coombes.

2. That the owners are (give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock): The American Mining Congress—a corporation, not for profit. No stockholders.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are (if there are none, so state): None.

E. RUSSELL COOMBES,

Business Manager.

Sworn to and subscribed before me this 22d day of September, 1920.

(Seal.)

THOMAS C. WILLIS,

(My commission expires February 29, 1922.)

satisfy. The only fly in the ointment is the absence of 'wildcatting' because of contraction of credit by the banks, with consequent slump in the demand for those commodities and supplies which this form of development and adventure demands. This is felt particularly in Texas, where wildcatting was the most engaging of pursuits, with all sorts of possibilities in both directions.

"Coal mining in the great plains States is in its usual condition of few days (of work) and full of troubles. In some localities it is better where mines have resumed operations. But too often there is the wearisome story of constant and apparently unnecessary strikes. Meanwhile, iron mining in Michigan and Wisconsin is well employed. The Central West, between the Ohio River and the Great Lakes, the Mississippi River and the Alleghenies, is in most excellent shape on the whole.

ARIZONA CHAPTER MEETS.

Mine managers from all over Arizona gathered in Tucson on September 13 for the annual meeting of the Arizona Chapter of the American Mining Congress, according to the report printed by the Tucson *Citizen*. The sessions were executive, and were held at the Santa Rita Hotel.

The following were in attendance: Norman Carmichael, governor of the Arizona Chapter, and general manager of the Arizona Copper Co.; Clifton J. E. Curry of Warren, secretary of the Arizona Chapter of the American Mining Congress; P. G. Beckett of Douglas, general manager of the Phelps-Dodge Corporation; Louis S. Cates, general manager of the Utah Copper Co., Salt Lake City; Capt. J. P. Hodgson, former governor of the Arizona Chapter, now general manager of the Morenci Branch, Phelps-Dodge Corporation; W. G. McBride of Globe, general manager of the Old Dominion Mining Co.; F. A. Woodward of Globe, general manager of the Iron Cap Copper Co.; Robert Tally of Jerome, general manager of the Consolidated Arizona Smelting & Refining Co., Humboldt; T. H. O'Brien, general manager of the Inspiration Consolidated Copper Co.; Col. John C. Greenway of Warren, general manager of the C. & A. Mining Co.; W. F. McGlennan, general manager of the Miami Copper Co.; Harry A. Clark of Douglas, superintendent of the C. & A. Smelter; Julius Kruttschnitt, Jr., of Tucson, southwestern representative of the American Smelting & Refining Co.; Col. Stout of Douglas, general manager of the Copper Queen Smelter; Michael Curley of Ajo, general manager of New Cornelia Copper Co.; W. S. Boyd of Ray, general manager of the Ray Consolidated Copper Co.; W. C. Browning of Superior, general manager of Magma Copper Co. and Patagonia Superior Copper Co.; Dr. L. D. Ricketts of Warren, geologist and consulting engineer; T. Evans, general manager of the Cananea Copper Co., Cananea, and T. McGrath, auditor for Denn Arizona and Shattuck Arizona, Bisbee.

**BENSON ASKS SUPPORT FOR
U. S. INSURANCE SYNDICATES**

Disappointed at the character of support given by owners of American merchant vessels to recently organized American marine insurance syndicates, Chairman Benson of the Shipping Board has appealed to them to adopt a more friendly attitude. He characterizes the prevailing American attitude as thoughtless, and asks that preference be shown the American companies.

**GLOBE-MIAMI DISTRICT WILL
GIVE SAFETY-FIRST PROGRAM**

A Safety-First program will be given at Globe, Ariz., during the week of October 10-16 by the Globe-Miami District Mine Rescue and First Aid Association, of which Orr Woodburn is director. The event has been extensively advertised. The program will include the issuance of proclamations by the mayors of all cities within the district; four-minute talks by teachers to the pupils of all schools within the district; four-minute talks in the theaters and to the men working in the mines; public addresses by capable speakers; safety first displays in store windows; competitive essays by school children, and the display of safety-first placards all over the district. The United States Bureau of Mines will co-operate by sending a mine rescue car to Globe for the week.

The committee in charge consists of: P. L. Marston, International Smelting Co.; G. H. Ruggles, Inspiration concentrator; R. T. Merrill, Inspiration mine; A. J. Davey, Miami Copper Co.; Albert Tallon, Old Dominion Co. mine; E. G. Deane, Superior & Boston Copper Co.; C. E. Lees, Iron Cap Copper Co.; W. G. Finch, Iron Cap Copper Co.; C. L. Conway, Arizona Commercial Mining Co., and Orr Woodburn, chairman, mine rescue station.

**OWNERSHIP OF BOLIVIAN TIN
MINES PASSES TO AMERICANS**

Guggenheim interests have acquired a group of tin mines in the Province of Inquisivi, Department of La Paz, Bolivia, and are now making elaborate preparations for their development, according to the report of Trade Commissioner W. L. Schurz. Among other improvements contemplated is the installation of a smelter plant at the mines. The practicability of electric smelters is one of the important factors being considered.

To July 1 six mines had been acquired—the Pacuni, Huanchaca, Caracoles, Bengala, Salvador and Bonaparte. The first three form a single group and the latter three are situated several miles away. All are situated high in the Andes, the Caracoles mines being 18,000 feet above sea level. Titles have been secured to about 5800 hectares, and petitions have been filed for about 3000 additional hectares.



The question of whether industry shall favor the closed or open shop is a question that is being widely discussed. In advocating the open-shop movement, **W. W. Atterbury**, vice-president of the Pennsylvania Railroad, said:

"Labor broke faith with capital during the war and so unionized industry that the closed shop has become a national menace.

"Before the war the Pennsylvania Railroad was organized for train service only, and at present the entire system is labor-ruled by the closed shop in its most virulent form. The closed shop is involved, and that means the nationalization of one of the great industries of this country, and this the country cannot afford if it wants low rates, efficient service and efficient operation. It will only be a question of time when the same attack will be made on every other industry in this country.

"In accordance with pre-war agreement the Pennsylvania Railroad held to the agreement not to institute any aggressive campaign, an agreement which labor flagrantly violated. Threatened strikes in order to force railroads to accept national agreements were common, and were only one of several forms of pressure brought to bear by labor organizations. An economic strike will be used to force the acceptance of labor demands unless decisive action is taken."

Along this same line, "Industrial Democracy," is a question of relative importance. There is a wide difference of opinion as to the meaning of industrial democracy. The vital question, of course, is its practicability. **R. L. Clausen** of Deere & Co., Moline, Ill., at a recent convention of the National Metal Trades' Association, expressed

some interesting views upon this important subject, which have been reprinted by "The Employer." Mr. Clausen says:

"We have heard a great deal in the last year and a half of 'new freedom' and the 'new era,' about industrial democracy. An implication has been spread over the country that because we have had a world war all previous industrial relations are, in some manner, wrong; that we must change them; that our social fabric and our institutions are wrong and must be reversed; that we must discard the known and enter into the untried and the unknown; in some vague way we must reverse everything, and in some way outside of himself the worker should get more and do less.

"Now, what are the facts? What is wrong? What does collective bargaining and shop representation gain? Why not continue to advance as we have been advancing industrially for the last fifty or one hundred years? Theory, no matter what it may be, cannot supplant the economic law. Human nature, our best educators and thinkers tell us, does not change. If this is a fact, is it not wise to hold fast to the known and experiment very carefully with the unknown? Nature wrote the first constitution, and so far as we know there is no one yet who has been able to violate it with impunity. The only way to meet discontent is to direct it into hopeful channels. Labor and not capital supplies the managers of industry. There are two ways open to the workman of today: he can save his money and become a capitalist, or he can study and learn and become a manager; those two ways in this century are open to everybody.

"It has been said in the past and is now claimed by many people that collective action has been responsible for the advance of the working man, for the improvement of his condition. I would

like to take the opposite position on that point. It is not high wages or the other concessions of one kind or another that have improved the condition of the workman; the thing that improves his condition is the invention and introduction and development of high-class machinery and the introduction and use of power—horse-power, steam power or electric power in place of man-power. The collective action of employees, wherever it may have been installed, has actually acted as a brake upon the progress of American industry because it restricted the output of goods and increased the cost of production. Collective bargaining and shop representation is entirely in line with the movement and spirit that has been extending through the country in the direction of direct government; that is, the referendum and recall, the socialism of industry, the Government ownership of railroads, and a great many other things that are being propounded and advocated, even by men who ought to know better. This country has the greatest per capita wealth of any country in the world; the people are better off; they have more of those things which they want or think they want; they have one automobile for every six people in Iowa today, and there is going to be one for every four later on. We have reached this standard by maintaining individual initiative and individual bargaining in industry. It is my belief that if you are going to try to do something for the workman, you ought to pick out first the kind of a man you are going to do something for; you ought to pick out a good citizen, and then don't do anything for him, but help him to do something for himself. We have too much of this doing for men in this country.

"What the workmen in this country want is recognition of the individual, not mass recognition. Collective bargaining and shop representation is nothing more than mass recognition, and it is not going to satisfy the man. What he wants is individual recognition, and there is only one way to get it, and that is to do business with men individually. Do not forget that 97 per cent. of all institutions in this country have less than 250 men; certainly no one will sanely propose shop representation or collective bargaining where the owner and manager can know every man by his first name. I think that even in the large shop you are not going to satisfy the man by mass recognition; he wants recognition of the individual; he wants to feel that he is a human-thinking individual entity; he does not want somebody else making his bargains for him, and you cannot promote the spirit of individual ambition or

individual initiative or maintain the progress of the country and keep this country by such mass recognition."

The repudiation by the anthracite mine-workers of the award of President Wilson's Arbitration Commission after they had agreed to be bound by its decision has called forth condemnation from the public at large. President **E. E. Loomis** of the Lehigh Valley Coal Co., commenting upon this situation, said:

"This action emphasizes the futility of collective bargaining with unions about which there has been so much talk. It is one more demonstration—and we have had a number recently—of labor not making contracts in good faith, and of leaders who do not lead, but trail. We are constantly being urged to put our whole faith in the unions, give them the closed shop, etc., and then we are treated to such outrageous violations of agreements as in the present instance."

The question of how we shall reduce taxation and at the same time meet the enormous obligations of this country on account of the World War is being met with helpful suggestions from the thoughtful people of the nation.

J. W. Harriman, president of the Harriman National Bank, in a recent issue in *Magazine of Wall Street*, says:

"The Great War left us a debt of approximately \$26,000,000,000. Sixteen of these we used up in our own efforts toward winning it, and about \$10,000,000,000 on account of the advance to our Allies for the same purpose. This latter is represented by ambassadors' notes without maturity and carries interest at 5 per cent. This interest item has recently dragged and been added to the principal until the accumulation is now about equal to the amount limited by act of Congress. The interest for this Allied debt of \$10,000,000,000 was raised through taxation. When the armistice came many of the taxpayers began to look forward to a reduction in taxes. The ambassadors' notes, however, still remain dormant—without maturity—in the archives of our Treasury Department. Moreover, no interest has been paid by our Allies to offset the interest which has to be met on the bonds that were issued for the purpose of assisting them in their crisis.

Our taxation has increased with but little promise of reduction. A conference should be called and a suggestion made to those countries that their debt be funded and, in lieu of the ambassadors' notes, a joint obligation be given us covering a period of years and drawing an attractive rate of interest. The obligation thus agreed upon and endorsed by the United States could then be exchanged for the outstanding Liberty and Victory bonds and offered to the American investing public bearing a higher rate of interest than these. The condition of the Federal Banks today shows a congestion due largely to these Liberty bonds being lodged with the banks by the member banks. The liquidation of this congestion and a consequent improvement in the Federal Banks' condition would bring about a release of credits, which would have a most healthy effect on our commercial and mercantile enterprises. And the making a live asset of the ambassadors' notes by the substitution for them of a new joint Allied obligation would, through the interest the new obligation would bear, offset a like amount of interest which the taxpayers have had to pay, and correspondingly reduce taxes for a like amount, or upon almost half of our war debt."

Along the same line, **E. J. McCone** of the Buffalo *Commercial* made a statement before the Rotary Club of New York on the subject of "The Closed Shop Press," saying that:

"Organized labor has exercised a strict censorship over the American press since July 1, 1917. I am prepared to subscribe \$10,000 to the disabled soldiers' fund if anybody present at the luncheon will point out an American newspaper that has editorially commended the open shop and opposed the closed shop since July 1, 1917. I have not an exaggerated opinion of my own importance nor the importance of the question in hand, but Samuel Gompers, president of the A. F. of L., has characterized my work by saying: 'All of the McCones this side of hell will never take the closed shop away from organized labor.' I believe that the reason that the Senate Sub-Committee refused to act upon the charges made was that this is a campaign year, and neither party can afford to take chances, but I believe that Senate investigations will be forthcoming next year."

C. Wilbur Miller, president of the Davison Chemical Co. of Baltimore, in

a reply to Mr. Gompers' attack on the United States Chamber of Commerce for advocating the open shop, refuses to admit that Mr. Gompers or the American Federation of Labor represents the majority of American workers, and contends that the workers in the majority are, in reality, for the open shop.

"Mr. Gompers assumes, first, that he, as president of the American Federation of Labor, represents and speaks for the workmen of the United States, and, second, that all employers are only thinking of themselves in approaching questions relating to labor. There is not the slightest foundation for either assumption. The American public knows that the Federation represents only a small majority of the workmen, and many of this number are aliens without the suffrage.

"Some months ago a committee of men from one of the plants I represent came to me with the complaint that the American Federation of Labor was turning the public against the workman, and that they felt it was time for the employers of non-union labor to defend them and act as their spokesman. I sought their reasons for opposition to the union, which were that they strongly objected to the tyranny and selfishness of the labor union leaders. They objected to being put upon the same level of less efficient or more indolent men. They were indignant at the strife and hard feeling being stirred up between employer and employe and the general branding of the employer as a scoundrel and discredited person. They knew most employers were once laboring men and they hoped to be themselves or were educating their children to be employers and had no intention of tearing down their goal. They felt the contact with the employer direct was more satisfactory and brought quicker and better results than through a medium which considered its own ends first and the men second, that men out of the union got better wages and were much more contented.

"The majority of workmen, the majority of employers, the majority of salaried men, the majority of professional men, and, I believe, the majority of union laboring men, if they speak their minds, believe in the open shop."

Soviet Russia took the lead in demonstrating to the world how futile the Bolshevik plan of control is. Italy now comes to the front with as perti-

nent an example. The **New York Evening Mail**, in an editorial upon the Bolshevik's seizure of a large number of factories in Italy, has the following to say:

"One of the spots where the Bolshevik shoe pinches the hardest is revealed by the news from Italy that the workmen who have seized a large number of factories with the intention of running them on Bolshevik lines have had to kidnap experts and imprison them in the works to keep them going.

"It has taken the would-be Bolsheviks of Italy only a few days to discover that it takes something more than muscles to carry on organized industry or productive industry of any sort. Like their brothers of Russia, they inaugurated their campaign of workmen's control of industrial establishments on the gay assumption that the workmen would furnish all the expert talent that would be needed.

"The shrinkage in production and employment by 30 per cent. in a few days has shown these queer 'idealists' that an industry must have managers, and that the workers cannot supply that need from their own ranks. But as the experts declined to return to the factories voluntarily, the embryo 'Reds' have resorted to the method of abducting the managers and making them manage, willy-nilly.

"The desperate hunt for experts by the Italian seizers of private property constitutes an important confession of the essential weakness of the entire Bolshevik industrial and political theory.

"And yet thousands of American workmen, presumably more enlightened and certainly far better treated than their brothers of Italy and of Russia, have plainly revealed similar short-sightedness and fatuity.

"In attempting to dictate to managers just how they shall manage—and to dictate in defiance of all economic laws—the radicals in the ranks of American labor are marching on the path that has led to failure and disaster in both Italy and Russia.

"There is little difference between the Italian process of kidnapping a manager and making him manage and the radical Americans' method of tying a manager's hands by all sorts of restrictions and still expecting him to manage."

In these days of pessimistic expression it is good to occasionally find a man who sees the light and is not afraid to point it out. **James J. Phelan** of

Boston has an optimistic view of the present situation and says:

"Evidences are accumulating fast that we have seen the worst of the money situation, and that within 30 to 60 days considerable money on time will be obtainable. Of course, rates won't go off much on time money for perhaps several months, with the picking up of general business all over the country, and the signs are that this has already started. Commercial demands will increase, but not, in my opinion, to the extent that they would absorb all that will be seeking employment after the crop-moving period has passed.

"I know it isn't fashionable to say so just now, but personally, I am looking forward to a big business in this country next year. If my conclusion in this respect is going to prove correct, I would naturally expect the stock market to begin discounting it to some extent before many weeks.

"Generally speaking, I think the security market as a whole, especially investments, has about seen bottom for a long time to come."

Guy Morrison Walker, in a letter to the *Wall Street Journal*, protests against the attitude of the newspapers of the country concerning the railroad question. He has written the *Journal* protesting vigorously against its statement that private ownership and operation of railroads is on trial. He says:

"There is private ownership because the Government cannot buy and the politicians dare not confiscate, but there is not even a semblance of private operation. You have compelled the owners of the railroads to deal with bandit labor unions; you have forced them to pay wages that bear no relation whatever to value of the services rendered, or current wages in other lines. You deny to the owners and operators the right to charge what railroad service costs under these blackmailing conditions and then pretend that railroad credit has been destroyed by the crimes and mismanagement of the private owners.

"The truth is that you are unwilling to let the private owners show what they can do by private operation, because if they had a chance they would show up the whole bunch of lawmakers, reformers and pseudo-economists by furnishing such excellent service at about half the

present cost that all these demagogues would lose their jobs and their standing forever.

"What the railroads of the United States need is not an increase in rates, but relief from regulation by the ignorant, incompetent and irresponsible. Restrictive legislation is what has ruined our railroad systems and destroyed the efficiency that formerly prevailed in the transportation business.

"How can you pretend there is private operation of railroads when one Government commission imposes the wage scale on the railroads regardless of whether they can afford to pay it, and another Government commission regulates their rates and denies them the right to charge what the service costs, and then appropriate from other Government revenues raised by general taxation a sum sufficient to make up the deficit and to guarantee a certain percentage of income on the capital investment in railroads?

"When the Government assumes or guarantees such a return on their investment to the owners and operators of a property, it relieves them of all responsibility for successful or economical operation, and, what is more serious, it robs the operators and owners of all incentive for careful and economical operation.

"It is useless to pretend that the railroad situation can ever be better or restored to efficiency until the whole present system is repudiated and thrown over and we have really private ownership on an economic basis.

"The recent raise in rates will cause an additional falling off in revenue traffic as did the previous raise in rates, while in the face of rising transportation costs the business of the country is bound to go backwards and languish.

"The only hope for returning prosperity lies in release from regulation, the return to economic operation and the steady reduction of railroad rates."

REDUCTION SHOWN IN 1919

GOLD AND SILVER OUTPUT

According to final figures of the Bureau of the Mint and the Geological Survey, the gold output of the country in 1919 showed a reduction of \$8,313,300 and silver production showed a falling off of 11,127,694 fine ounces. The final report for the year, by States, follows:

CO-OPERATIVE WORK ON ALLOYS

The Bureau of Mines has entered into a co-operative agreement with the Wellsbach Company to study various alloys, particularly those containing cerium. The co-operative agreement with the Vanadium Corporation, which also covers work on alloys, is proceeding.

State or Territory.	Gold		Silver	
	Fine ounces.	Value.	Fine ounces.	Value.
Alaska	481,984	\$9,963,500	690,151	\$773,790
Arizona	222,965	4,609,100	5,702,911	6,392,222
California	841,638	17,398,200	1,153,614	1,293,051
Colorado	495,810	10,249,300	5,966,606	6,687,790
Georgia	34	700	8	9
Idaho	34,085	704,600	5,933,076	6,650,207
Illinois .....	.....	6,000	6,000	6,725
Maine	10	200	4,142	4,643
Michigan .....	.....	.....	425,610	477,054
Missouri	14	300	75,991	85,176
Montana	116,918	2,416,900	15,012,278	16,826,790
Nevada	225,384	4,059,100	7,045,395	7,896,972
New Mexico.....	28,319	585,400	851,821	954,781
North Carolina.....	5	100	19	21
Oregon	53,029	1,096,200	236,620	265,220
Philippine Islands.....	41,119	850,000	15,715	17,614
South Carolina.....	5	100	2	2
South Dakota.....	255,889	5,289,700	122,068	136,822
Tennessee	271	5,600	97,554	109,345
Texas	19	400	539,483	604,690
Utah	109,661	2,266,900	12,542,623	14,058,650
Vermont	19	400	2,200	2,466
Virginia .....	.....	.....	8	9
Washington	11,436	236,400	258,270	289,487
Wyoming	14	300	300	336
Totals.....	2,918,628	\$60,333,400	56,682,445	\$63,533,652

THIS BOOKKEEPING SYSTEM SAVES TIME, MONEY, TROUBLE

A simplified semi-monthly statement which eliminates the daily payroll and saves time, money and temper has been put into use by the Raleigh-Wyoming Coal Co., whose offices are in Charleston, W. Va. The statement, which is printed in duplicate, is shown below.

Instead of making up a daily payroll, the

Raleigh-Wyoming company enters all debits and credits to each employe on one of these sheets direct, making a carbon copy. At the end of the period the original is handed to the employe and the duplicate retained by the company and used for making up the payroll summary.

Under the head of earnings are four columns. They permit the bookkeeper to show

SEMI MONTHLY

RALEIGH-WYOMING COAL CO.

STATEMENT

Name..... Ck. No..... P. R. No..... Half Mo. Endg.....

EARNINGS						DEDUCTIONS			
Date	Rate	Total	Items	Rate	Amount	Store Orders	Explosive	Items	Amount
1 16			Coal					Store Orders	
2 17			"					Explosives	
3 18			Yardage					Collections	
4 19			"					Doctor's Collection	
5 20			Room Turning					Hospital	
6 21			" "					Liability Insur.	
7 22			Month					Extra Cuts	
8 23			Days					Smithing	
9 24			Hours					Rent. Ho. No.	
10 25			"					Coal	
11 26			"					Material	
12 27			Extra Cuts					Labor Transfer	
13 28			Labor Transfer					Cash	
14 29			Cash						
15 30									
31									
Total Earnings						Total Deductions			
Less Deductions									
Balance Due									

This Statement and Check below are subject to any and all terms to any individuals of the person whose account is shown hereon.

DETAILS OF DEDUCTIONS AND RATES:

Pay Roll No.....

Pay Check No.....

four different rates without making cross-entries.

The statement is 8¾ inches deep by 7 inches wide. The perforated portion at the

bottom is two inches deep. Only the original sheet is perforated. This part of the statement is used as a receipt, the reverse side being printed as below: ~

No. _____ Received from the RALEIGH-WYOMING COAL CO. for services rendered

\$ _____ due me as wages for the Half Month ending

192 _____

Witness _____ Signature: _____

On payday the employee, after receiving his statement, detaches the receipt, signs it and exchanges it at the mine office for his pay check.

The chief advantages arising from the use of this statement are the elimination of duplication by transcribing and the receipt by the employee of a detailed statement for each day's transactions. Actual usage has demonstrated that the latter feature prevents many disputes. Belief that he has been overcharged

and underpaid is a grievance not at all uncommon among coal-mine employees, but where they are able to trace down each day's transactions they are less prone to impugn the company's honesty.

At Valier, where these statements are used, one man keeps the records for 650 employees, and the payroll is closed two days after the end of the pay period.

The statements are kept on arch files, each file containing about 200 names.

BOOK REVIEW.

"THE OIL SHALE INDUSTRY," by Victor C. Alderson. Frederick A. Stokes Company, New York.—A volume prepared to meet the widespread demand for comprehensive information on the problem of retorting of oil from shale and the establishment of the oil-shale industry on a permanent and profitable basis, which the author describes as "the great problem of this decade."

Dr. Alderson covers all phases of the oil-shale question—the history of the petroleum industry, the destined exhaustion of the present supply, the approach to the peak of production and the necessity for finding a petroleum substitute, which necessity causes the investigator to turn a hopeful eye toward the limitless beds of oil-bearing shale. He treats of the nature, origin and distribution of shale, its history and the mining and retorting of oil therefrom; gives an account of experimental and research work, and discusses economic factors.

Being the first American treatment of the subject, the book is prepared so as to interest investors, engineers and chemists.

WESTERN LAND CLASSIFIED

During August the Geological Survey classified 151,000 acres of California and Wyoming land as within producing oil and gas structures.

FUEL-LIGHT COST INCREASES DURING SEVEN YEARS LOWEST

Cost of fuel and light increased less than that of food, clothing, furniture or miscellaneous articles of ordinary household consumption between 1913 and 1920, according to Bureau of Labor Statistics. The increases were as follows:

Fuel and light.....	71.9 per cent.
Miscellaneous.....	101.4 per cent.
Food.....	119.0 per cent.
Clothing.....	187.5 per cent.
Furniture and furnishings...	192.7 per cent.

During this same period housing increased in cost only 34.9 per cent. The average total increase of all articles in these six classifications from 1913 to June, 1920, was 116.5 per cent. The average increase for the six months' period from December, 1919, to June, 1920, was 8.6 per cent.

CHANGES IN ALASKAN PORTS

The President has issued an Executive order abolishing Sulzer, Alaska, as a port of entry and creating the new port of Craig, Alaska, these changes to be effective November 1.

OIL AND GAS PERMITS

The following permits to prospect for oil and gas were issued by the General Land Office during September (figures indicate number of acres):

Alaska.

Juneau District.—Alaska Oil Co., 2560; Edwin Wentworth, 2560; Edwin Wentworth, 2560; Earl C. Simmons, 1600. (All in the Cold Bay District, Alaska Peninsula.)

Arizona.

Phoenix District.—Clayton C. Brooks, 1280; B. S. Reed, 1280; Edward Rucker, 2560; E. S. Wiatt, 2560; Albert M. Kring, 2560; R. L. Kelth, 2560; Ben W. McCloskey, 2560; George J. Melkielejohn, 2560; Charles F. Edeler and George F. Felts, 2560; Forrest Bradfield and Heber A. Stewart, 2560; J. B. McNoughton, 2560; Charles A. Hayes, 2560; Charles S. Osborne, 2560.

California.

Visalia District.—Alden Eckles, 160; H. Widner, 320; E. D. Butts, 320; Eddystone Oil Corporation, 2040; Charles Britt, 160; Ellis Mallery, 640; J. H. Thornbur, 640; H. A. Kenney, 480.

El Centro District.—F. B. Ford and four others, 2560; C. C. Riggins, 640; S. A. Peel, 640; C. Satterwhite, 1280; H. I. Reynolds, 2560.

Independence District.—Percy C. Heron, 1280.

San Francisco District.—Leon E. Norris, 2400.

Los Angeles District.—Charles A. Purke, 480; Fred H. Coble, 1120; Alice G. Howell, 640; Cyrenius T. Farmilee, 640; J. Doan Carey, 640; Julia Taylor, 160; Chester S. Van Brundt, 160; Constance V. I. Perry, 1920; Elizabeth Jackson, 1120; Louis C. Masten, 320; Thomas Kennedy, 960; Herbert S. Adair, 2560; Horace L. Brady, 600; C. A. Barlow, 120; E. B. Hawley, 1960; C. O. Barker, 1760; L. F. Flormann, 1280; L. M. Ryan, 160; C. D. Hamilton, 480; A. V. Hartley, 160; C. D. Hauverman, 640; Kern County Land Co., 320; J. S. Law and C. O. Reid, 1280; D. B. Harris, 40; J. R. McCarthy, 160; Andrew Innes, 480; Cajon Oil & Gas Co., 2560; Daniel C. Kidder, 640; Robert Smart, 2560; Constantine M. Mooslin, 2240.

Colorado.

Pueblo District.—Otero Oil & Development Co., 2560; Nathaniel W. McConnell, 400; Mutual Oil & Development Co., 2400.

Durango District.—Arthur Eaton, 2400.

Idaho.

Boise District.—C. U. Albin, 320.

Hailey District.—G. C. Bremer, 320; P. E. Watkins, 1280; H. C. Bowles, 1400; J. R. Fitzsimmons, 160; E. Drussel and two others, 200; G. C. Brewer, 320; Ida H. Angel, 1155;

H. F. Crutchley, 1280; P. E. Watkins, 1280; W. J. Speckman, 1440; J. Peterson and three others, 2240; W. B. Silver, 2240; Clifton M. Perkins, 800; David L. McClung, 1200; Oasis Oil Co., 2560.

Louisiana.

Baton Rouge District.—W. R. Hollingsworth, 160; C. W. Hollingsworth, 160; Clyde Farr, 223.

Montana.

Great Falls District.—E. Paul Wymond, 480; J. R. Villars, 280; Vir Willson, 560; Harold Campbell, 1160; Otto Huber, 145; W. J. Hoague, 360.

Lewistown District.—Harrison Green, 320; S. S. Ford, 960; R. J. Gobban, 2080; A. M. Weirick, 480; Little Bear Petroleum Association, 160; U. T. Campbell, 600; Julian A. Suttler, 320; Oiltana Petroleum Association No. 1, 320; Great American Oil & Gas Co., 80; Jester Gandler, 200; Ernest W. Bean, 240; Box Elder Dome Petroleum Association, 40 and 92 (two permits).

Billings District.—Earle B. Patten, 960.

Glasgow District.—A. Foster and J. F. Forbes, 320; F. R. Miller, 211; D. J. Clifford, 480 and 480 (two permits).

Miles City District.—Sherman Hunt, 1440; R. J. Batt, 640; A. M. Brockway, 120; J. Rowland, 1800.

Nevada.

Carson City District.—Thomas A. Massey, 1920; Melvin A. Griffin, 1920; H. U. Nelson, 1280; Crescent Oil Co., 640; Warren E. Lee, 2560; George H. Noakes and others, 160; C. J. Corvin, 1280; E. G. Pearson, 1280; James Firton, 320; Martha Wilson, 2560; Fannie Wilson, 320; J. P. Branley, 320; Consolidated Oil & Potash Co., 320; Fallon Petroleum Oil Co., 640; E. B. Buckwalter, 1280; A. S. Proskoy, 1280; P. A. Cassus, 1280; W. B. Exline, 1280; Joe York, 1280; Calivada Oil Co., 1280; L. L. Moody, 1440; T. J. D. Salter, 1760; H. C. Power, 2560; E. W. Robinson, 2560; D. J. Kinney, 2560; J. H. Yetter, 2560; Fallon Modoc Oil Co., 2560; W. E. Turley, 2560; J. E. Houser, 2560; C. B. Burr, 640; T. J. D. Satler, 1760; H. U. McNeil, 2560; J. E. Houser, 2560; Bernard Cox, 2560; D. D. Besse, 1280; Norman Merchant, 320; Louis O. Cannon, 1280; Robert O. Weed, 1280; J. M. Rice, 2560.

Elko District.—Elko Oil Corporation, 2575 and 2560 (two permits); J. S. Gurney, 2560 and 2560 (two permits).

New Mexico.

Roswell District.—Martin Yates, Jr., and J. D. Atwood, 2560; Bryan McWhorter, 2560; E. W. Dobson, 2560; C. D. Bonney, 2500; L. B. Craig, 1680; Mary E. Yates and A. H. Rockfeller, 2560; National Exploration Co., 2560.

Fort Sumner District.—Fred I. Phelps,

2560; E. P. Arranet, 2560; Beulah Crow, 800; R. A. Archuletta, 2560.

Las Cruces District.—F. A. Hawley, 2560; R. T. Harding, 2560; F. F. Wilcox, 2240; W. H. Loutz, 2240; J. N. Atkinson, 2560; J. S. McClure, 1840; J. N. Bean, 1440; N. S. Dawson, 1920; G. P. Loomis, 1360; C. R. Rottke, 2560; H. P. Demand, 2560; Robert L. Howze, 2560; W. B. Zimmerman, 2560; Ramon Montinjo, 1920; A. H. Loomis, 2560; C. T. Guy, 2560; N. C. Smith, 2200; F. N. Koester, 2560; H. V. Cogswell, 2560; U. N. Peirce, 2560; John M. Bowman, 2560; R. H. Strurgeon, 2560; Wesley J. White, 2560; S. T. Barnhill, 2560; B. G. Dyne, 2560; J. C. Robbins, Jr., 2560; A. A. King, 2560; Frank Light, 1280; W. T. Cardwell, 1880; R. S. Clemons, 2560; C. O. Burch, 2560; W. A. Nugent, 2560; C. R. Gross, 2560; C. M. Counts, 2560; O. M. Lee, 2560; G. H. Coykendall, 2560; J. H. Grant, 2560; C. H. Unger, 2560; Lewis W. Carl, 1760; C. M. Nebeker, 2560; Paul Thomas, 2560; Francis C. Holloway, 2560; P. M. Rigdon, 2560; Jornada Oil Co., 2560; Wheeler Shropshire, 2560; John L. Dyer, 2560; D. R. Mapel, 2560; P. F. Welsenhorn, 1920.

Sante Fe District.—J. A. Lasater and John C. Herr, 2360 and 2460 (two permits).

Oregon.

Vale District.—John C. Houston, 440.

South Dakota.

Rapid City District.—V. M. Kirk, 40; S. R. Nixon, 160; Arthur Clark, 160.

Utah.

Salt Lake District.—H. N. Palsley, 960.

Washington.

Yakima District.—S. E. Goodwin, 480.

Wyoming.

Cheyenne District.—N. R. Greenfield, 2400; Seminole Oil Co., 640.

Buffalo District.—H. F. Kennedy, 640; Lloyd U. Wilson, 2560; Arthur U. Stevens and Burt Griggs, 2560; Simon Binswanger, 649; Harry Levin, 1400; Wm. Edgar Downie, 640; Paul Mass, 1749.

Douglas District.—A. R. Stewart, 161; John E. Schuricht, 320; Elizabeth D. Lamb, 320.

Lander District.—E. Brown and three others, 1160; J. D. Younger and one other, 880; Clyde Brown, 480; Clarence A. Green, 2560.

"HISTORICALLY SPEAKING"

Art and sentiment have combined to make "Historically Speaking," issued by the Taylor-Wharton Iron & Steel Co., a notable addition to the commercial literature of America. The book has been issued to commemorate the one hundred and seventy-fifth anniversary

of the making of iron and the twenty-fifth anniversary of the making of manganese steel at Highbridge, N. J., where an appropriate celebration was held on October 13, 1917.

A "veritable record, recast from the mold of time of the Taylor-Wharton Iron & Steel Co.," beginning when Messrs. Allen and Turner, in 1742, started the business and employed Robert Taylor to manage the work for them, is given in the opening chapter by Knox Taylor, incumbent president of the organization. Between Robert Taylor and President Knox Taylor the business was managed by three other generations of Taylors—A. S. Taylor, L. H. Taylor and William J. Taylor. A silhouette of Robert Taylor, and pictures of the succeeding four generations of Taylors, together with a photograph of Vice-President Percival Chrystie, another of the fifth generation, are shown.

One of the striking features of the publication is the insight it gives into the spirit of confidence and co-operation which has always obtained between the management of the company and its employees. Photographs are shown of 35 men who have been in the company's service from 30 to more than 50 years, the line, "Faithful Fulfillment," appearing at the top of each page. One who reads the lines of character and faithfulness, easily seen in their photographs, readily understands why President Knox Taylor, in his address at the celebration, could afford to say:

"We are, so far as I know, the oldest in our line. We are not the biggest—we have never aspired to be. With us it has not been quantity, but rather quality. We are not in the class of the big tonnage corporations; we are in a special class of our own, doing a special business requiring infinite care and detailed attention. Such work as ours is not accomplished by great masses of automatic machinery. We need the individual and intelligent and resourceful worker. We need workers who take individual pride and interest in their jobs and the company as a whole. That's the kind of business we do, and that's the kind of employees we are—men and women both."

Faithfulness being a matter of reciprocity, the reader is not at all surprised to see, as the conclusion of the volume, a reproduction of a magnificent loving-cup, one of which was presented, during the celebration, to T. O. Aller, Adrew Apgar, William Burke and Jacob Struble, each of whom is the first of three generations, all of whom are still employed by the company.

"Historically Speaking" is valuable, not only as the history of an interesting firm, but because of its intrinsic literary worth, and also because of its exposition of the method of solving industrial relations.

NEITHER WORK NOR WELFARE PROMOTED BY CLOSED SHOP

The closed shop neither promotes efficiency nor elevates the character of workmen, according to the decision of a Wisconsin court in the case of *A. J. Monday Company vs. Automobile, etc., Workers of America*, reported in 177 N. W. 867. The law involved in the case was Chapter 211 of the Acts of the Wisconsin Legislature of 1919, patterned after the Clayton Act. It provides that the State anti-trust laws shall not apply to labor unions, and, among other things, that no restraining order shall be issued growing out of disputes "concerning terms or conditions of employment" unless necessary to prevent irreparable property injury.

In the case at issue the automobile employees struck to enforce a closed shop. There was no question of wages or hours involved. An injunction had been issued and the workers moved to vacate the order on the ground that it violated the Wisconsin statute above quoted. In declining to vacate the order the Court said: "It is a strike purely and simply for the closed shop. The closed shop does not aid the members of Local No. 25 to become more skillful or efficient workers, to promote their general welfare, elevate their character, or to regulate their wages, hours or conditions of labor in any except an indirect and remote way."

BUREAU GIVES NEW NAMES TO MINE EXPERIMENT STATIONS

The Bureau of Mines has given new names to several of the mines experiment stations, designating each either by its geographical location or the particular work in which it is engaged. Following is the way they will be known hereafter:

Location.	Name.	Work.
Bartlesville, Okla.	Petroleum	Oil.
Berkeley, Cal.	Pacific	Chemicals; magnesite; miscellaneous.
Columbus, Ohio.	Ceramic	Ceramics.
Fairbanks, Alaska.	Alaska	Development of resources of Alaska.
Minneapolis, Minn.	North Central.	Utilization of low-grade iron ores.
Pittsburgh, Pa.	Pittsburgh	Mining; largely coal, electro-metallurgy.
Reno, Nevada.	Rare and Precious Metals.	Rare and precious metals.
Seattle, Wash.	Northwestern	Ceramics; coal washing; electro-metallurgy.
Salt Lake City, Utah.	Inter-Mountain	Low-grade lead and zinc ores.
Tucson, Ariz.	Southwestern	Low-grade copper ores.
Urbana, Ill.	Central District.	Coal.
Birmingham, Ala.	Southern	Iron and steel; coal; coke; by-products; bi-metallics.
St. Louis, Mo.	Mississippi Valley.	Lead and zinc.

THOMAS GOES TO CHICAGO

The Oil News carries the following item of interest to oil men:

"J. Elmer Thomas, the well-known petroleum geologist, has opened an office in 751 First National Bank Building, Chicago. Mr. Thomas was graduated from the geological department of the University of Chicago in 1912, after which he spent a year in mining geology in Mexico. Returning to the United States he entered petroleum geology, to which he had devoted his time ever since except during the war, when he was in the air service. He has been associated with the Chicago Oil Co., Colonel Getty's Minnehoma Company, Sinclair and others. For the last fifteen months he has made San Antonio, Tex., his headquarters while investigating conditions and formations in Southwestern Texas. Mr. Thomas was the first president of the American Association of Geologists. He is especially interested in the increasing importance of Chicago as an oil center."

DULL HOME MARKET FORCES SALE OF VESSELS TO EUROPE

The Shipping Board has authorized the sale to foreign persons and transfer to foreign registry of 10 steel steamers of approximately 3700 deadweight tons each, constructed on the Great Lakes by the American Shipbuilding Co. This company built the vessels on its own account, and was unable to interest American purchasers. The vessels will go to France, Norway, Sweden, Holland, Denmark, Belgium, Spain, Italy, Great Britain and its colonies and dependencies. The selling price will approximate \$662,700 for each vessel, or \$171 per deadweight ton.

INDUSTRIAL NOTES

In order to render more efficient service and to obtain close co-operation with their customers in Western New York, the Jeffrey Manufacturing Co. has opened a new branch office in Buffalo at 1108 Marine Trust Building, which will be in charge of Mr. H. W. Scott, formerly of the home office. Mr. Scott has had long and successful experience in sales and engineering work for the company, which especially fits him to take care of the constantly-growing demand for Jeffrey products in his territory and render valuable assistance to clients in handling of problems covering elevating, conveying, crushing, pulverizing, portable loading machinery, etc.

Bulletin No. 2 has just been published by the Lidgerwood Manufacturing Co. This bulletin covers a most complete line of steam hoists for all contracting purposes, such as building construction, steel work hoists, bridge erecting, pile driving, hoists for all types of derrick work, for handling self-filling grab buckets, coal tower hoists, shaft and tunnel work, quarrying and dredging. It is most complete and comprehensive.

A booklet which the Chicago Belting Co. has just issued is an augmented reprint of that section of its new catalogue entitled "Practical Information." So much of the efficiency which is to be attained by any belt used for the transmission of power is dependent upon the care which is given to that belt by the men in the shops that this booklet has been issued for the education of the workmen. The issuance of this booklet for this purpose has met with a ready response from belt users all over the United States, and can be supplied in quantities from 3 to 100 copies each.

Two very attractive catalogues have recently been issued by the Jeffrey Manufacturing Co. of Columbus, O.—General Catalogue of Mine Locomotives No. 263 and Mining Machinery Catalogue No. 312. During the 40 years which have elapsed since the first mine locomotive was designed and completed Jeffrey engineers have made a special study of this character of equipment. The new Catalogue No. 263 carries very artistic illustrations and full descriptions of the Jeffrey company's line of mine locomotives and describes fully its various electrical and mechanical features. Catalogue No. 312 gives particular attention to the Jeffrey pivoted battery box, which makes motors accessible for inspection and oiling without removal of the battery box, and illustrates and describes important features of Jeffrey storage battery locomotives for mining service.

The development of pneumatic mining and quarrying tools has been so rapid and their performance latterly so efficient that it is but natural they should now be regarded as having reached such a state of perfection that radical changes or improvements are, generally speaking, no longer expected.

And yet, notwithstanding this popular notion, the Denver Rock Drill Manufacturing Co., which has for quite a number of years been in the forefront of rock drill progress, has recently developed a new type of light mining and quarrying drill which, it is claimed, marks an advance in the progress of air drill manufacture that has seldom, if ever, been equaled by any single achievement.

This new type of drill is built in three models, known, respectively, as Models NA-90, NRW-93 and NRD-95; the first named being a "dry" auger drill, especially designed for work in coal, iron and other soft formations; the second, a combination "wet" and "dry" rock drill, efficiently serviceable in all kinds of rock and under all conditions, either above or below ground; and the last named, a "dry" rock drill particularly adapted to work in wet shafts or where out-of-door conditions prevail.

All three drills are extremely light, so that they can be easily carried about, and each is operated by one man alone.

They are built throughout of the very best steels compounded and with the utmost precision.

While most Waugh drills are of the valveless type, the "Ninettes" are equipped with an entirely new type of spool valve, having a positive section, which is said to be the last word in simplicity and in efficiency as well.

The rotation mechanism is of exceptionally strong design, in which stresses in both teeth and pawls are reduced to a minimum.

Lubrication is effected by pulsations of air, which gradually feed the oil from a reservoir at the side of the cylinder into all parts of the machine.

The manufacturers state that comparative tests conclusively prove these "Ninety" drills to be much superior, more powerful and more efficient, at all pressures, than other drills of their general type and weight, and express themselves as feeling gratified at being able to make such a substantial contribution to cost reduction and stimulation of production in mining and quarrying at a time when the country stands in greatest need of labor-saving improvements in machinery used in these industries.

IMPORTS AND EXPORTS DROP

Exports in August were valued at \$584,000,000, a drop of \$67,000,000 from \$651,000,000 in July of this year and \$62,000,000 less than the exports of \$646,000,000 in August, 1919. Exports for the eight months ending with August were valued at \$5,483,000,000, an in-

crease of \$211,000,000 over the exports of \$5,272,000,000 in the first eight months of 1919.

Imports in August were valued at \$519,000,000, a decrease of \$18,000,000 from the amount of \$537,000,000 in July, but \$212,000,000 more than the imports of \$307,000,000 in August, 1919. During the eight months ending with August of this year imports amounted to \$4,000,000,000, an increase of 77 per cent., or \$1,738,000,000, over the imports of \$2,262,000,000 in the same period of 1919.

The excess of exports over imports was \$65,000,000 in August. For the eight months' period ending with August the excess of exports was \$1,483,000,000.

Gold imports increased from \$2,500,000 in August, 1919, to \$15,400,000 in August, 1920, and for the eight months' period from \$55,000,000 in 1919 to \$160,000,000 in 1920.

Gold exports in August were \$25,000,000, compared with \$45,000,000 a year ago, but for the eight months' period increased from \$197,000,000 in 1919 to \$242,000,000 in 1920.

Silver imports increased from \$56,000,000 in the eight months ending with August, 1919, to \$67,000,000 in 1920, while the exports of silver for the same period show a decrease from \$164,000,000 in 1919 to \$92,000,000 in 1920.

REDUCTION IN METALS OUTPUT OF FOUR WESTERN STATES

Advance figures on 1919 metal production in Washington, compared with 1918 production, prepared by C. N. Gerry of the United States Geological Survey, follow:

Ore treated—1918, 138,911 short tons; 1919, 100,879 tons; gold produced—1918, 14,737.83 ounces; 1919, 12,232.20 ounces; silver produced—1918, 310,093 ounces; 1919, 259,384 ounces; copper—1918, 1,922,406 pounds; 1919, 1,676,576 pounds; lead—1918, 5,271.815 pounds; 1919, 2,146.157 pounds; zinc—1918, 38,873 pounds; 1919, blank; value of 1918 production, \$1,467,421; value of 1919 production, \$968,961. There were 84 producers in Washington in 1918 and only 49 in 1919.

Production figures for Idaho are also shown as follows:

Ore treated—1918, 2,091,619 tons; 1919, 1,457,395 tons; gold produced—1918, 33,998.72 ounces; 1919, 34,502.89 ounces; silver produced—1918, 9,172,340 ounces; 1919, 5,579,056 ounces; copper—1918, 6,533,888 pounds; 1919, 3,122,763 pounds; lead—1918, 294,695.993 pounds; 1919, 182,341,898 pounds; zinc recovered—1918, 45,161,712 pounds; 1919, 15,994,229 pounds; total value of 1918 production, \$36,522,158; 1919, \$18,374,315. There were 301 producers in Idaho in 1918 and only 210 in 1919.

Figures for Utah, prepared by V. C. Helkes

of the Geological Survey, follow: Ore treated—1918, 14,705,718 tons; 1919, 6,745,423 tons; gold—1918, 142,666.10 ounces; 1919, 104,464.41 ounces; silver—1918, 13,455,597 ounces; 1919, 11,649,961 ounces; copper—1918, 227,169,630 pounds; 1919, 124,061,807 pounds; lead—1918, 167,008,224 pounds; 1919, 123,829,051 pounds; recoverable zinc—1918, 18,399,417 pounds; 1919, 4,431,024 pounds; total production value—1918, \$86,047,597; 1919, \$45,169,328. There were 251 producers in Utah in 1918 and only 179 in 1919.

Figures for Idaho, prepared by C. N. Gerry, follow: Ore treated—1918, 2,091,619 tons; 1919, 1,457,395 tons; gold produced—1918, 33,998.72 ounces; 1919, 34,502.89 ounces; silver—1918, 9,172,340 ounces; 1919, 5,579,056 ounces; copper—1918, 6,533,888 pounds; 1919, 3,122,763 pounds; lead—1918, 294,695.993 pounds; 1919, 182,341,898 pounds; recoverable zinc—1918, 45,161,712 pounds; 1919, 15,994,229 pounds; total value of production—1918, \$36,522,158; 1919, \$18,374,315. There were 301 producers in Idaho in 1918 and only 210 in 1919.

OIL SHALE STATION DESIRED BY U. S. BUREAU OF MINES

The Bureau of Mines is requesting from Congress an appropriation of \$170,000 for the establishment of an oil shale station, the appropriation to cover the cost of grounds, laboratory and equipment.

In referring to oil shale investigations recently, Dr. F. G. Cottrell, director of the Bureau of Mines, said: "In the work on oil shale technology the Bureau has been much handicapped by lack of funds. However, two of its engineers have been able to give most of their time to investigations and experiments connected with this work. The oil shale industry is at present passing through a critical period. A relatively large amount of money has already been spent by private individuals in endeavors to determine the practical and commercial feasibility of retorting oil from oil shales. However, the industry is faced with a lack of essential fundamental information which it is the province of a Government bureau to obtain. There are a multitude of technical problems which are yet to be solved.

"The development of the oil shale industry must necessarily be a matter of years, not only because there must be built up a fund of technical knowledge and practical experience, but because great amounts of capital and labor will be necessary before any con-

siderable proportion of our present and future oil needs can be supplied from our shales. There is no doubt but that the industry will be developed into one of the largest in the United States, and it is high time the Government hasten this development by starting immediately the necessary preliminary investigations."

The Bureau plans in case Congress makes the necessary appropriation to erect a one-unit Scotch retort, the design and operation of which is already well understood, to provide a standard. By means of this standard retort it will be possible to compare various processes, various methods of retorting and various shales, one with another, respectively. Dr. Cottrell believes that this standardization will be invaluable and that it can best be done by a governmental agency.

MINERAL PRODUCTION FOR YEAR NEARLY FIVE BILLION DOLLARS

The total value of all minerals produced in the United States in 1919 was \$4,653,700,000, according to the United States Geological Survey, which has issued a preliminary summary on "Mineral Resources of the United States in 1919."

The total was 16 per cent. less than that of 1918. Metal products decreased in value 36 per cent. and mineral fuels and other non-metallic products fell off in value 3 per cent.

Gold, bound by a fixed price, while costs of mining continued to rise, declined greatly in output from dry or siliceous ores and from placers, and also as a by-product from ores of base metals, whose prices decreased. These conditions continued during the first half of 1920, and in June, 1920, only 42 per cent. of the gold mines of the country were active.

Silver output decreased 18 per cent. Commenting on prices, the report says the price of silver began to decline early in 1920, and by June was as low as 84 cents an ounce, "but it is expected that legislation fixing \$1 as the price at which silver mined and refined in the United States will be purchased by the Government will raise the general market price again."

Copper, lead and zinc declined in output and in value, although the production of much

of the lead ore was favored by its relatively high silver content. A poor demand for these metals has continued well into 1920. The pendency of a bill proposing a tariff on zinc in the Senate is noted.

Iron ore declined 13 per cent. and pig-iron 21 per cent. in output, owing to the poor demand for structural materials in the first part of 1919, but largely on account of the steel and coal strikes in the last part of the year.

When war contracts were terminated manganese producers could find no market. Markets for tungsten, chromium and other minor metals used for ferro-alloys were also insignificant, and the accumulated stock has brought production of these metals to a standstill.

War Minerals Situation.

"Hope was expressed by some that enlarged production of at least a few of these war minerals might continue after the war," says the Survey, "but overproduction and present lack of demand have reduced most of them to their pre-war status. Tariffs on some of the metals of the war minerals group have been proposed, but none have been established."

As to coal, the Survey shows the total output during the first half of 1920 has not been sufficient to meet present consumption and replenish stock depleted by the strike.

Production of petroleum increased in 1919, but owing to greater consumption stocks were only slightly augmented, and prices of crude oil were considerably advanced. "Only curtailment in domestic usage and exports, while American interests do their share of development work in foreign oil fields, will enable us to maintain a supply sufficient for our most vital needs and to establish reserves sufficient for any considerable number of years.

"The unsettled state of the mineral industries in 1919 has shown no tendency to improve up to June, 1920," the report concludes, "and with a political campaign beginning the prospects of stabilizing industry are none too bright. With the exception of the war minerals, most commodities are below normal in output. Marked increases in production are to be expected in 1921 and succeeding years until normal output is reached."

MINING AND PETROLEUM DIGEST

Industrial

Every month the *Financial World* prints "Little Sermons on Economic Law," being quotations from the works of famous economists. The one which follows is especially pertinent:

"The economists have clearly recognized and defined the rights of organized labor. The following concrete statement on the subject was written by Dr. Walker fifty years ago, and is as sound today as when it was written:

"The principal object of trades unions, generally, is the increase of wages. The different trades often combine for this purpose, and endeavor to fix the rate at which they will work. This, it would seem, they have an undoubted right to do; whether it be good policy is another question.

"Men may mutually agree, for example, that they will work ten hours per day, and will have two dollars per day as wages. All who voluntarily join such an agreement are in honor bound to keep it; and, if the association binds itself to support those who are turned out of employment, it has also the undoubted right so to do.

"But, while all this is conceded, it does not follow that if a member violates the rules of the society his associates may inflict any punishment upon him for doing so, except such as the law of the land authorizes. *A trades union has all the rights which each individual member has, and no more.* Hence any attempt to inflict punishment upon such delinquent is as much an infringement of his rights, and of the laws of the country, as if it were done by an individual.

"Again; nor has a trades union any right whatever, moral or legal, to interfere in any manner with those of their craft who do not choose to enter into their association. If such persons prefer to work at a less rate of wages than that established in the tariff of the union rather than not work at all, they have the most unquestionable right to do so; and any attempt to prevent them by brute force is in infringement of personal rights which government is bound to resist to the utmost. Such an act is merely the act of a mob, and has no justification. Nay, more: under a free government, where these very men who have thus combined are citizens, with the right of suffrage, and, in common with others, elect those who enact the laws under which they live, any outrage of this

kind is an overt act of moral treason against republican institutions. It is a virtual declaration that these institutions *have* failed and *must* fail to give adequate protection, and therefore these aggrieved parties are obliged to resort to violence; in other words, to override the Government, the Constitution and the laws."

Output and the Seven-Hour Day

A comparative statement of great value on the relative advantages of long and short working days in different types of occupations appears in the *Colliery Guardian* of London, England, in which not only the results in England are named, but those arrived at by investigation in the United States, Switzerland, Germany and other countries:

"The completion of a year's working of the miners' seven-hour day affords a fitting opportunity for briefly reviewing the position as regards the influence of the shortened hours upon output. It is not yet possible to give complete figures, and the matter is complicated somewhat by the fact that during the last portion of the time a largely increased number of men have been employed in the mines. Practically it appears as if the estimate of 10 per cent. reduction in output, given in the Sankey report, would be approximately realized. It is not so certain, however, that the Sankey prediction will be fulfilled in regard to the recovery of the pre-war output within two years. There is still a large amount of leeway to make up before we reach an annual output of 287,000,000 tons, which represents the figure for 1913. The weekly shortage, measured by this standard, is still 865,000 tons; and although the average output per man has lately shown signs of considerable improvement, the output per man per shift amounts only to between 15 and 16 cwt., as compared with over a ton in pre-war days.

"The effect of shorter hours of work, in fact, does not seem, as yet, to be producing the result that some optimists had predicted and others had hoped to reach. It would, however, be wrong to base any wide generalization upon the figures hitherto available. Whatever may be the ultimate effect of the shortened working day upon output, its influence cannot be accurately judged under existing circumstances. We are too near the great upheaval caused by the war and

its aftermath to expect that miners, any more than other workers, will forthwith resume their old efficiency.

LESSONS FROM EXPERIENCE

"In the meantime it is useful to follow the progress of events in other countries. There has lately been published in the United States a Research Report by the National Industrial Conference Board, reviewing the hours of work problem in five major industries. The general conclusion arrived at is that a shorter working day increases the efficiency of workers who are called upon to use intelligence at their occupation; but, where the output is mechanical and automatic, production is inversely proportional to the length of the working day. This is, of course, exactly what would be expected. The point is, to which of these categories does mining belong? It is not easy to answer this question because the output of a mine depends upon the co-ordination of many kinds of labor, some of which requires the highest intelligence, while others are as purely mechanical as could well be found in any occupation. It is this complexity of the labor factor in mines that makes it so difficult to apply general principles to its consideration.

"The United States Health Service also has recently made some investigations from which it is concluded that an 8-hour shift is more profitable than a 10-hour shift, not only in respect of increased output, but also in the diminished accident rate, a fact which is held to prove the existence of a direct relation between fatigue and risk. But unfortunately we cannot reason from this that a 7-hour shift would be more advantageous than an 8-hour shift. The optimum conditions for different kinds of work remain still to be determined; but although there are probably wide differences not only in different occupations, but also in separate individuals, it should not be impossible ultimately to arrive at an average working day that would give satisfactory results from any reasonable point of view."

High Average Daily Wage

One often reads reports of high wages paid in isolated cases to individual miners for periods of one week or two weeks, or periods of high pay for a certain number of hours' work. The following news item is of interest, in that it covers the average pay of miners in two mines of one company:

"Pittsburgh, September 10. — During the last two weeks in August the average pay of miners in two of the many mines of the Bertha Coal Co. was \$22 a day.

"This is perhaps a record that has never been achieved at any coal mine in this country, and shows the possibilities of miners

when an adequate car supply is available, based on the present scale of wages, the highest in the history of the business in this country."

Labor's Share of Wealth

Due to inaccuracies of labor exponents, we are often afflicted with the statement that 2 per cent. of the population owns 90 per cent. of the wealth, which, of course, is a gross statistical error in that it omits the enumeration of all population under 21 years of age and omits the enumeration of wealth in small units. But it is usually an effective scare-head. An article in the *Annalist* puts both these shoes on the other feet by showing that labor is the holder of the nation's wealth and income, and that the return to capital upon the wealth of the country is less than 5 per cent. and that wage-earners already receive more than 80 per cent. of the produce of industry:

"The main conclusions of this paper are the following: The fixed wealth of the United States in 1916 was about \$260,000,000,000, whereof about \$30,000,000,000 was in stocks of goods and all the rest in real estate, railways, etc. The population of the country was about 102,500,000 souls, of whom about 41,000,000, men and women, were workers, about 14,000,000 of them being farmers. The total national produce was about 1,200,000,000 tons of goods, worth from \$45,000,000,000 to \$50,000,000,000. Out of that produce a group of people aggregating a little more than 400,000, who received incomes in excess of \$3000 and paid income taxes, got about \$7,900,000,000. Less than one-half of that was derived from investments and more than one-half came from the personal efforts of this class. Persons enjoying income of less than \$3000 received about 44 per cent. of the dividends paid by corporations, and a much larger proportion, perhaps 75 per cent., of the Government, State municipal and corporate interest payments. There remained from \$23,000,000,000, to \$28,000,000,000 to be divided among 27,000,000 non-agricultural workers, who received an average of somewhere between \$855 and \$1040 each. Among the great classes of workers there is a wide difference in earnings. The farm-hand in 1916 averaged about \$400, the factory worker \$675, the steam railway man \$886 and the metal miner \$1250. Some classes probably averaged higher wages than the metal miner.

CAPITAL'S SMALL SHARE

"The purely capitalistic return, i. e., profits, interest and rent, upon the wealth of the country cannot be determined, but apparently

is only a small percentage, certainly less than 5 per cent. on the fixed wealth.

"Since 1916 the population of the United States has been increasing at the rate of about 1,700,000 per annum, but the aggregate production of goods has increased scarcely any. Out of the substantially stationary production much has been wasted in warfare and much has had to be supplied to the people of Europe. The quantity available per person in this country has therefore diminished. The talk about labor henceforth participating to a greater extent in the produce of industry is mostly nonsense, for labor already gets all that may be divided, and the only way it can get any more is to produce more. When labor thinks that it is getting more of the produce of industry by extortionate strikes, as a whole it is doing no such thing. The quantity of goods consumed by the 400,000 income taxpayers is relatively insignificant. What really happens is that one class of labor, in order selfishly to satisfy itself, diminishes the ability of other classes of labor to obtain their needful share of goods. Manifestly conditions that enable some wage-earners to bid shoes up to \$12 per pair do not greatly trouble people in the tax-paying class, but do prevent many other wage-earners from having any shoes at all, or else having them at the expense of something else."

WEALTH OF THE UNITED STATES

	1912.	1916.
Real estate.....	\$110,676,333,071 (a)	\$150,000,000,000
Mines .....	..... (b)	8,000,000,000
Live stock.....	6,238,338,965 (c)	7,235,000,000
Farm implements.....	1,368,224,548 (d)	1,675,000,000
Manufacturing machinery and tools.....	6,091,451,274 (e)	8,000,000,000
Gold .....	..... (f)	3,000,000,000
Silver	2,616,642,734 (f)	1,000,000,000
Railways	16,148,532,502 (g)	20,500,000,000
Trolley lines.....	4,596,563,292 (h)	5,000,000,000
Teleg. & Telep.....	1,304,685,743 (h)	1,500,000,000
Pullman cars.....	123,362,701 (i)	130,000,000
Ships	1,491,117,193 (j)	1,000,000,000
Canals .....	..... (j)	1,000,000,000
Irrigation enter- prises	369,865,270 (i)	400,000,000
Water works, pri- vately owned.....	290,000,000 (i)	300,000,000
Light and power privately owned.....	2,098,613,122 (h)	4,500,000,000
Gas plants.....	..... (h)	3,500,000,000
Furniture, car- riages, &c.....	8,463,216,222 (l)	9,220,000,000
Clothing, jewelry, &c.	4,295,008,593 (m)	5,120,000,000
Stocks of goods...	21,576,065,840 (n)	29,520,000,000
Totals.....	\$187,739,021,060	\$260,600,000,000

Coal

While it is not a development which will constitute a large permanent supply of coal, it is an interesting outgrowth of the recent relatively high prices that reclamation of coal lost in bunkering and lost cargoes is be-

ing attempted. The following from *Sauvards Journal* tells of this process :

"The Argonaut Salvage Corporation has begun reclaiming coal from the bottom of Long Island Sound by means of a new invention, which is said to make such an operation commercially possible with coal selling at its present prices. The company's vessel, the *Reliance*, recently steamed into Bridgeport harbor with 300 tons of bituminous aboard, which was recovered off Penfield Reef in about 60 feet of water.

"Two other steamers will be put at work shortly, it is said, and they are expected to bring up about 2000 tons a day under favorable conditions. The method of procedure is to locate a sunken barge and then remove as much of the cargo as is readily accessible. How long the vessel has been under water has a good deal to do with determining the amount of coal that can be recovered, for when a barge goes to pieces the cargo is apt to be washed away or mixed with mud and sand."

REASSURING FUEL FIGURES

Statistics are usually alarming, but the following figures from the office of the Geological Survey are reassuring to those who have feared a coal famine during the coming winter :

"For four weeks in succession the bituminous output has exceeded 11,000,000 tons a week. The following figures show how the production has been running since the end of July and how it compares with the same period a year ago :

Week ending—	—Net tons.—	
	1920.	1919.
July 31.....	9,371,000	9,943,000
August 7.....	10,432,000	9,359,000
August 14.....	11,813,000	9,092,000
August 21.....	11,039,000	10,675,000
August 28.....	11,390,000	10,443,000
September 4.....	11,051,000	9,651,000*

*Five-day week.

"Production of soft coal during the first 211 working days of the last four years has been as follows: 1920, 358,464,000 tons; 1919, 307,364,000 tons; 1918, 398,981,000 tons; 1917, 372,953,000 tons. The year 1920 is thus 14,500,000 tons behind 1917 and 40,500,000 tons behind 1918, but is over 51,000,000 tons ahead of 1919.

"Production of beehive coke continued to decline during the week ending September 4. The total output is estimated at 395,000 tons, a decrease of 24,000 tons compared with the preceding week. Output in the Connellsville region, as reported by the *Courier*, declined

from 211,100 tons to 196,590 tons. Present rate of production is considerably less than last year at this time. In the corresponding week of 1919 the output for the country was 448,000 tons. Total output since the first of the year shows an increase of 9 per cent. however."

NATION OVERCOMES CRISIS

An article in the *American Coal Journal* quotes J. D. A. Morrow, vice-president of the National Coal Association, in part as follows:

"The nation is emerging from a crisis in its soft coal supply which, until the last few weeks, threatened its whole economic life. Only by bringing into play stupendous efforts on the part of the bituminous coal operators and the railroad executives, backed by the Interstate Commerce Commission, has a dire emergency been met and an industrial calamity avoided.

"As an outcome of these co-operative efforts between the operators and the railroads coal is now moving to the Northwest and to New England so as to meet an acute shortage which early in the summer menaced many public utilities and industrial plants in those territories, while also threatening a partial shutdown of industries generally throughout the country. This difficult undertaking, which called for an immediately augmented flow of cars to the mines as well as co-ordinated effort by the operators to see that cars at their disposal were expeditiously loaded and put under way to relieve the existing shortages, is achieving its object. The acute shortages at points served through the Great Lakes and New England, as well as the rest of the country, are rapidly being made up.

"The plain fact is," said Mr. Morrow, "that a fuel administration could have accomplished nothing in the existing emergency that the operators and railroads could not do themselves. Being entirely a matter of more cars at the mines and priority shipments to territories in most need of coal, it essentially was a thing for the operators and the railroads to handle. It did not take them long to find a way, and this done it was only a matter of putting the scheme into practical operation.

"While the requirements of the Northwest and New England were the primary considerations, it was also comprehended that no coal should be taken from Michigan, Ohio, Pennsylvania, New Jersey and similar territory to give coal to the Northwest and New England, but these sections must have all the coal they had been getting for their immediate needs and for a supply for next winter.

EMERGENCY HAS BEEN MET

"To handle the emergency the operators have been obliged to overcome a shortage in-

herited from the strike last winter. On April 1 there was a shortage of 15,000,000 tons, which ordinarily would have been spread throughout the country in the hands of big and smaller consumers. This shortage, because of unprecedented demands of great manufacturing plants and public utilities, grew until early in the summer it had reached 25,000,000 tons. In June public utility plants in the great cities found themselves with stocks of coal to last only a week to ten days. Individual plants were in the same fix. The small consumer was unable to lay in his winter supply.

"When the bituminous coal operators gathered in Washington in July to canvass the situation it was conservatively estimated that 545,000,000 tons of coal must be shipped from the mines for the year ending April 1 next to meet requirements.

"It was calculated in July that a weekly output of 12,000,000 tons up to December 1, as against a weekly average from April to July of 9,500,000 tons, was needed to catch up with the deficiency and assure a supply to carry the country over next winter.

"Difficulty in getting cars back to the mines during the first two weeks after the Northwestern priority order went into effect on July 26 hindered the program. The last week in August, however, the railroads dumped 1,278,065 tons of coal, or 78,065 more than the schedule requirement.

"As to New England, the emergency has more than been met. Within ten days after the New England priority went into effect the railroads touching the fields serving tidewater had carried out the weekly program calling for the 1,250,000 monthly tonnage by railroad and water, while the all-rail shipments had increased to a point to insure the successful operation of the whole New England program.

"While much has been said of the advisability of putting an embargo on overseas exports of coal, the fact is that any such embargo would be highly impracticable. It has been demonstrated that by the use of the facilities for tidewater trans-shipment of coal to New England the needs of New England can be adequately met. The performance since the New England priority order went into effect has sufficiently demonstrated it."

Copper

The growth of the demand for copper as an industrial metal is interestingly discussed in the *Financial World*, from which the following excerpts have been made showing the earlier history of copper development.

"About the time when Professor Agassiz, a noted Swiss geologist and professor of geology and natural history at Harvard College, invested his savings and some of the savings

of the Shaw and Higginson families in some copper prospects in the forested wilds of northern Michigan, which later turned out to be the great Calumet & Hecla enterprises, the world was using copper metal chiefly for sheathing wooden-ship hulls, for making copper pots and kettles for household use, and for brass ware.

"The battle between the 'Monitor' and the 'Merrimac' apparently sealed the doom of the copper industry of Civil War times. It destroyed the wooden-ship building industry in the end, and with it, the old main use for copper metal. However, in the late sixties and early seventies, a new demand was created for copper metal on a larger scale, by the spread of the electric industries, beginning, so far as affects copper, with the spread of trans-Atlantic cables.

"Professor Faraday had been for years showing British university students freak experiments. With a strong 'voltaic' battery he sent a current through wire that made the wire white hot. He also showed how a coil of wire developed electricity when you spun it around a magnet. The telegraph and telephones were the first practical applications of electricity. Both were in existence during the Civil War on a small scale.

BEGINNINGS OF INDUSTRY

"The embryonic growth of the electrical industries had developed such a demand for copper by the early eighties, that some Pennsylvania and New York copper and metal merchants—Phelps-Dodge & Company—sent one of their technologists, the late James Douglas, to acquire and develop some copper mines of their own out West. This led to founding the copper industry at Bisbee and elsewhere in Arizona and in the Southwest. About 1883, the elder Hearst and Haggin and Marcus Daly, practical silver miners of Park City, Utah (Hearst and Haggin were among America's foremost gold-silver mining magnates and financiers of those days with interests in Dakota, California, Mexico, etc., chiefly gold mines), had become so impressed with the future of copper, that they decided to invest several millions in the old silver mines at Butte, Mont. These particular silver mines were interesting because the ore had enough copper by-product to make the by-product valuable. And so was founded the copper industry at Butte. Now the silver is the by-product!

"In the early nineties, two new channels developed a mushroom expansion of the electrical industries. One was the electric trolley car which supplanted the old horse car and cable car in towns, and made possible inter-urban car lines. Secondly, came the wholesale harnessing of water falls and long-distance transmission of the water power in the form of electric current. Prodigious amounts

of heavy copper wire were required in these directions.

"Between 1902 and 1906, Daniel Cowan Jackling developed a cheap mining method, and his mining-camp pal, the late Frank Janney developed a cheap milling method. Jackling succeeded in getting the Boston and New York bankers, Hayden, Stone & Company, to finance mines and mills, and the latter, about 1908, succeeded in interesting the Guggenheims in providing smelting facilities. Thus was born and developed the 'porphyry copper' mining business which now produces the bulk of the world's copper metal.

CONSUMPTION BELOW NORMAL

"In 1919, some 876,000,000 pounds refined copper were delivered to domestic consumers in United States, and 517,000,000 pounds exported, according to the United States Geological Survey. I estimate about 500,000,000 pounds additional new production elsewhere that was consumed, and also an additional 230,000,000 pounds of war 'left-over' copper that was consumed in 1919. This suggests a total actual consumption of copper amounting to 2,125,000,000 pounds in 1919, or actually less than the 1912-13 normal! Of the 1919 consumption, I estimate 1,000,000,000 pounds used up in this country, or more than before the war, and 1,125,000,000 pounds used abroad, or less than before the war—emphasizing that not only had after-the-war demand not yet set in in 1919, but not even normal routine peace demand.

"In 1920 to date, refinery output of copper has been at the rate of about 1,850,000,000 pounds a year. Apparent actual sales into delivery (not merely booked orders) exceed new production by 26 per cent, as I have computed from the first six months' reports of the big Utah, Nevada, Ray and Chino and the Independent United Verde Extension companies. If we assume for the entire industry and for the entire year, 20 per cent. excess sales over production, sales of American copper would approximate 2,220,000,000 pounds for 1920. Add about 480,000,000 pounds foreign, non-American new production, and you have 2,700,000,000 pounds sold to consumers in 1920. Deduct about 200,000,000 pounds for, let us say, surplus stocks carried by consumers on hand at the end of 1920 versus practically bare cupboards at the beginning of 1920, and you have an apparent actual consumption of 2,500,000,000 pounds in 1920 versus 2,125,000,000 pounds in 1919, and 2,225,000,000 pounds normal routine demand in 1912-13 yearly.

"The normal routine demand for 1920-1921, if business were anywhere near normal, I estimate would be about 2,600,000,000 pounds. I anticipate a growth of 5 per cent. a year, or say 20 per cent. in four years, which would make the normal routine demand by 1925 in excess of 3,000,000,000 pounds, or in excess of

present world production capacity to supply new copper."

PRICES TO REMAIN HIGHER

This same magazine in a further article by its same copper expert makes the following statement with regard to the normal price of copper:

"Today 18½ cents a pound is considered a low price for copper metal. Before the war a price as high as 18½ cents was never reached in modern history with but a single exception, the 1906-07 boom period. Even in the great 1912 copper boom, the highest price reached was 17½ cents a pound.

"In the good old days of the Copper Kings in the eighties and early nineties of last century, 12 cents was considered a very good price for copper metal, and when times were hard Marcus Daly and James B. Haggin and the Boston crowd gladly took 8 cents or 9 cents a pound. Then in the nineties began the demand for copper for electric trolley cars, for hydro-electric power projects, for telephones and lighting; Rockefeller and the Steel crowd bought into Anaconda (Amalgamated), and a new day dawned for copper. From 1898 on, 12 cents was considered a panic low price for copper metal; the extreme lowest price ever reached was 11 cents in the panic period of early 1902, repeated only in the late summer of 1914, immediately following the outbreak of the war.

"The venerable W. A. Clark, the only survivor of the old Copper Kings of a generation ago, has lived to see the metal selling above 30 cents a pound in late 1916 and early 1917—within two years after selling at 11 cents in the late summer of 1914.

"The war and its end have established again a new and still higher price standard in the copper industry, and I do not think a price as low as 15 cents a pound will be seen for years to come, if ever. How high the price of copper may go, I do not care to predict, as I have never made a habit of pre-

dicting. As to my prediction against a price so low as 15 cents a pound in the years to come, this prediction is eminently safe considering that the average cost of production has been 16 cents a pound since 1917. In fact, after the armistice, when the copper market was completely moribund for five months, the *Engineering and Mining Journal* once did report prices at extreme bottom, a slight fraction under 15 cents; but this quotation was nominal—there was no selling of appreciable amounts of copper metal at any such prices, and as soon as copper buying started again in June, 1919, the price immediately went to 18 cents, then 20 cents, stayed above 20 cents for over five months, and has never since gone under 18 cents. That the price should hold above 18 cents is remarkable considering that enormous surplus stocks of unsold copper metal are still carried by the companies; dividends have had to be curtailed, and important buying of metal has been almost suspended since April.

"In the years after the war, 16 cents to 18 cents a pound must be considered as rock-bottom, panic-low prices for copper metal; that over 20 cents must be a normal or average price for the red metal, versus 14½ cents for 15 years before the war, and about 12 cents in the eighties and nineties; that as to how high copper may go, one prediction is as good as another; and that the seemingly high prices are inevitable when one considers how costs have grown with the years.

"The average cost of producing a pound of copper today exceeds 16 cents and over 16 cents a pound has been the average cost of production since late 1917. This is an official Government figure to which I shall refer again, shortly.

"In 1916, the average cost of producing copper was 9¾ cents a pound as reported by 27 leading companies, and would have been under 9 cents for these companies were it not for the high copper prices the last few months of the year, which automatically raised wages up the sliding scale then in vogue."

AVERAGE PRICE OF COPPER METAL

	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900
Jan.	18.9	17.5*	23.5	28.7	24.0	13.6	14.2	16.5	14.1	12.3	13.6	13.9	13.7	24.4	18.3	15.0	12.4	12.2	11.0	16.2	15.6
Feb.	18.6	16.8	23.5	31.8	26.4	14.4	14.5	14.9	14.1	12.2	13.3	12.9	12.9	24.9	17.9	15.0	12.1	12.8	12.2	16.4	15.8
Mar.	18.3	14.9	23.5	31.5	26.3	14.8	14.1	14.7	14.7	12.1	13.2	12.4	12.7	25.1	18.4	15.1	12.3	14.4	11.9	16.1	16.3
Apr.	18.7	15.2	23.5	27.9	27.9	16.8	14.2	15.3	15.7	12.0	12.7	12.6	12.7	24.2	18.4	14.9	12.9	14.4	11.6	16.1	16.8
May	18.5	15.9	23.5	28.8	28.6	18.5	14.0	15.4	16.0	12.0	12.5	12.9	12.6	24.0	18.5	14.6	12.8	14.4	11.9	16.1	16.3
June	18.1	17.6	23.5	30.0	26.6	19.5	13.6	14.7	17.2	12.4	12.4	13.2	12.7	21.7	18.4	14.7	12.3	13.9	12.1	16.1	15.7
July	18.5	21.6	25.9	26.6	23.9	18.8	13.2	14.2	17.2	12.4	12.2	12.9	12.7	22.1	18.2	14.9	12.4	13.1	11.8	16.3	16.0
Aug.	....	22.3	26.0	25.4	26.1	16.9	11.5*	15.4	17.5	12.4	12.4	13.0	13.5	18.4	18.4	15.6	12.3	13.0	11.4	16.3	16.3
Sept.	....	21.8	26.0	25.1	26.9	17.5	11.0*	16.3	17.5	12.2	12.4	12.9	13.4	15.6	19.0	16.0	12.5	13.2	11.5	16.2	16.4
Oct.	....	21.5	26.0	23.5	27.2	17.7	11.0*	16.3	17.3	12.2	12.6	12.7	13.3	13.2	21.2	16.3	13.0	12.8	11.4	16.3	16.4
Nov.	....	19.8	26.0	23.5	30.6	18.6	11.7	15.2	17.3	12.6	12.7	13.1	14.1	13.4	21.8	16.6	14.3	12.6	11.3	16.2	16.4
Dec.	....	18.3	23.0*	23.5	31.9	20.1	12.8	14.2	17.4	13.6	12.6	13.3	14.1	13.1	22.9	18.3	14.7	12.0	11.4	13.8	16.3
Year	...	18.6*	24.3*	27.2	27.2	17.3	12.0*	15.3	16.3	12.4	12.7	13.0	13.2	20.0	19.3	15.6	12.8	13.2	11.6	16.1	16.2

*Estimated; no figures published for these months and years by the Engineering and Mining Journal.

Mexican Oil Situation

The Mexican oil situation is well summarized in the *Commercial and Financial Age* as follows:

"To obtain a first-hand report of actual conditions in Mexico, the United States Government, it was made known on September 14, has summoned George T. Summerlin, the American Charge d'Affaires in Mexico City, to Washington for a series of conferences with Secretary Colby and other Government officials. With regard to Mr. Summerlin's mission, Washington advices of September 14 to the *New York Times*, said:

"Mr. Summerlin, it is expected, will report on all phases of the Mexican situation and will tell why the present Mexican Government has taken no steps to annul certain of the Carranza Government decrees, not only those affecting foreign oil interests, but also other property interests in which Americans are concerned, including the failure to take steps to indemnify American farmers and merchants who were deprived of their holdings by Carranzistas or bandits during the previous Mexican Administration. It is said that the protests of these farmers, merchants and other persons have been ignored despite the fact that the records prove that the great majority of them strictly complied with Mexican laws."

"The Mexican Government has maintained a firm stand for the enforcement of certain laws against which foreign interests, especially the American oil men, have for a long time voiced vigorous protests.

AMERICA TAKES EXCEPTION

"Following the termination of a controversy between the oil interests and the Mexican Government over payment of export taxes it was announced officially on September 7 that instructions had been sent to the American Embassy in Mexico City, about three weeks before, to notify the Mexican Government that the United States regarded the operation of the 'denouncement law' and the Federal zone law in the oil fields as an infringement of the rights of Americans under International law. It was learned at the State Department by a Washington correspondent of the *New York Times* that the American note, dispatched early in August, did not call for a reply, being in the nature of a protest to make the record straight when the matter shall come up again for consideration. It was directed against what was described as an invasion of the vested rights of Americans, and was described as an unmistakable declaration of the State Department's concern that American owners should not be deprived of their vested rights without their assent. Subsequently on September 9, it became known that the rights of Americans

engaged in agriculture, mining and manufacturing in Mexico, as well as of those interested in oil properties, have been the subject of recent representations to the Mexican Government. Instances regarded as infringing on these rights through double taxation or confiscatory measures have been noted in the correspondence, it was said. The action was described as in line with the policy of the State Department to keep Mexican officials advised that the United States expected American vested rights in that country to receive the protection due under accepted International usage.

"The attitude of the Mexican Government on the oil question was made plain on September 7 by Provisional President de la Huerta. At a luncheon given to foreign press correspondents on that date he declared: 'Mexico has no desire to curtail her exportations of oil to the United States and the campaign waged there relative to the oil question is nothing but so-called "North American bluff" by enemies of the Mexican Government.' He further said:

WHAT DE LA HUERTA SAID

"The Federal zones are the property of the nation, which maintains she has a right to dispose of them as she desires. A departure from this policy would mean the loss of the nation's sovereignty.

"The controversy would be settled if other nations would recognize Mexico's ownership of her own subsoil. Mexico does not desire to check American domination of our oil production. On the contrary, we would welcome such preponderance if our laws were obeyed. Petroleum, despite the present situation, is not the greatest point at issue between Mexico and the United States. Protection of foreign lives and property is our most important international problem."

"President de la Huerta said the greatest assistance the United States could render Mexico would be 'recognition of our present Government and the legality of its rulings and laws.' He added:

"Inasmuch as this is a republican government, in which the majority rules, the desires of the majority—that is, the proletariat—must prevail.

"Any Government which wishes to avoid cataclysm must direct the evolution of labor, and not obstruct it. Any nation that does obstruct it is headed for an upheaval.

"We propose to enact laws in Mexico providing for development of industries along the lines which the majority demand. Otherwise, there will be another revolution. As the outgrowth of the last revolution the desires of labor and the purposes of the Government are traveling parallel lines."

"President de la Huerta, it was announced in advices of August 6 to the Department of

Commerce, had promulgated a decree creating the Mexican Consulative Petroleum Board to assist in the study of conditions in the Mexican petroleum industry, including legislation and controversies arising out of operation of the Mexican oil fields. In promulgating the decree, the President declared that 'the Mexican petroleum industry needs, for its full development and establishment, agencies essential for the same, especially such as by technical labor may contribute to the knowledge and better solution of numerous problems which the nationalization of the oil-bearing subsoil gives rise to.' The functions of the new board were enumerated to be as follows:

"The study of the bills and other legal provisions with reference to the petroleum industry.

"The study of the controversies which may arise in petroleum matters.

"The general investigation of the conditions in the petroleum industry.

"Encouragement of the petroleum industry.

"The study of the fuel problem as a basis for industrial progress.

"The study of the national petroleum industry as related to that industry in other countries.

"The settlement of points of a technical character submitted to the Board by the Department of Industry, Commerce and Labor, the various Departments of State or private individuals.

"Said settlement shall have the character of an opinion which shall be submitted to the decision of the Secretary of Industry, Commerce and Labor."

Tax Decree

The State Department at Washington, D. C., has been advised of an executive decree of the Government of Mexico relative to the payment of taxes on mining property in Mexico. This decree will be of interest to all persons who are holding properties or who have idle holdings within the Southern Republic. This decree, published in the *Diario Oficial* of Mexico City on July 20, contains regulations covering the payment of taxes now due and provides that additional charges will be remitted to companies complying with the present laws and paying the taxes for the first two quarters of 1920. The decree as received by the State Department reads as follows:

"1. All the additional charges owed by those liable to the annual tax on mining property are hereby remitted, provided the parties

interested pay the first and second quarters of the present year before August 31 next.

"2. The proprietors of mines who were owing quarters previous to 1920 and shall have paid the two quarters of the year in conformity to the preceding article, shall have the right to pay quantities (amounts) quarterly which they are in arrears in as many installments as there are quarters that they owe and thus settle the amount of one quarter in arrears every time they make payment on the regular taxes.

"3. If the parties involved do not take advantage of the exceptions established by this decree or do not make payment on the dates on which the respective periods for such payment expire, this failure shall give occasion to the declaration that their respective titles are revoked without leaving room for any further recourse.

"4. The owners of mining properties who complied with the articles of the decree of June 28, 1919, shall continue to meet their obligations in accordance with that decree.

"5. The main tax officers are authorized to receive in conformity to the present decree the payments which those owing the annual tax on mining property may wish to make, but they should include at the end of the monthly accounts which they render to the Department of Hacienda a report in which they express the customary data with a notation as to whether the interested parties have complied with the exemptions referred to in the foregoing article.

"Transitory articles 3, 4, 5, 6 and 7 of the decree of June 27, 1919, are revoked."

Sizing Up New Regime

The New York Times has published the following interesting account of the recent elections in Mexico which gives the mining industry an idea of what can be expected from the possible stability of the new Government there:

"General Alvaro Obregon, a candidate of the Liberal Constitutionalist party, was elected President of Mexico on September 5 by an overwhelming vote. The election, which was called by Provisional President de la Huerta, to choose a successor to Venustiano Carranza, took place without any disorders. Obregon, while a former Minister of War in the Carranza Cabinet, was one of the most prominent leaders in the revolution which brought about the downfall of the late President. The Liberal Constitutionalist Party was responsible for the Plan of Agua Prieta, which repudiated the leadership of President Carranza. The National Republican Party, while non-sectarian in its principles, is largely composed of Roman Catholics. Obregon had two nominal opponents,

neither of whom was taken seriously, though Alfredo Robles Dominguez, nominated by the National Republican Party, was expected to receive considerable support among the conservative Catholic element.

"The other opponent, Nicholas Zuinga Miranda, is known as Mexico's perpetual candidate and is believed to be unbalanced. He has been a Presidential candidate for the last thirty years, having begun during the early days of the Diaz regime, when he was considered as merely a foil for that virtual dictator.

"Dominguez's campaign was taken seriously in the present elections, but it was regarded as an attempt to feel out the strength of the Catholic following and prepare the ground for placing a strong united Catholic Party in the field for the next Presidential elections to succeed Obregon.

"Declarations in favor of a liberal foreign policy, with guarantees of life and property to nationals of other countries and encouragement of foreign investment, were contained in manifestos on September 4 by two of the opposing candidates for the Mexican Presidency. The international planks of the two platforms translated textually were given in the press dispatches of September 4 from Mexico City, as follows:

OBREGON'S PLATFORM

"General Obregon (Liberal Constitutionalist):

"'Inviolability of our sovereignty as an autonomous State.

"'Absolute respect for the sovereignty and institutions of all countries of the world.

"'Facilities for foreign capital wishing to invest in our country for the development and improvement of its natural riches, seeking ways to reconcile in the most practical and fair way the advantages obtained by capital and labor and the public treasure.

"'Complete acknowledgment of all legitimate rights obtained by foreigners in our country.

"'Guarantees that all foreigners residing in Mexico enjoy, in the broadest sense of the word, all the privileges and protection granted by our laws.

"'Frank tendency to reinforce and establish our foreign relations on the aforesaid basis.'

"Robles Dominguez (Republic Nationalist):

"'Re-establishment of our relations with foreign countries, giving real guarantees to their nationals and to their investments. Because of our geographical location we should pay especial attention to our relations with the peoples of the continent.

"'Encouragement of wholesome immigration and of the investment of capital for the

development of communications, agriculture and industry, since the foreign element is an important factor in the progress of young nations.'

"Both candidates favor progressive internal policies and point out the necessity of honest administration. They differ radically, however, as to the Constitution of 1917, at present in force. General Obregon recognizes the present organic law, while Senor Robles Dominguez is pledged, by a pronouncement recently issued by his party, to call a convention in case he is elected, and set in motion the machinery for the adoption of a new Constitution.

"Alfredo Dominguez, General Obregon's opponent, sent to the Deputies in Congress, just previous to the election, a petition asking them to rule that General Obregon was constitutionally barred from becoming a candidate for the Presidency. The petition, it was said, reviewed the military record of General Obregon preceding the overthrow of Carranza, maintaining that this disqualified him under Article 82 of the Constitution, which says that any candidate 'shall not have taken part, directly or indirectly, in any uprising, riot or military coup.' The petition further quoted the electoral law and the criminal code in support of its argument.

"Advancing doubt of the legal standing of the Obregon candidacy, the authorities in several districts had, it was said, refused to register his candidacy."

Confiscation Protested

Following the election of Obregon, the United States Government has issued a protest to Mexico against confiscation laws, which the *New York Times* summarizes as follows:

"He explained that the debts of Mexico were most pressing, and that this would be the first thing taken into consideration when he assumes office. 'We will pay our debts as far as possible, and will arrange for means to pay off all obligations. I think that when we show that we are paying to our full capacity we can arrange all our difficulties. Deeds, not words, will be our motto regarding our debts.'

"When asked if Mexico would include the Victoriano Huerta loan of about forty million pesos, Senor Obregon stated that as yet he had not studied the matter thoroughly, but he would have a commission of experienced experts pass upon Mexico's debts and the manner in which to pay them.

"'I will try to surround myself with men of experience and ideas, who will decide these questions,' he said, adding that his Ministers would be selected for ability and would have full responsibility. He would be guided by

their advice and they would be real Ministers, not merely figureheads as during the Carranza regime.

"The General said that he had not studied the oil question enough to make a statement, but that Article 27 would be regarded as a fundamental part of the Constitution. It was the desire of the Government to interpret this article in a way that would protect Mexico's interests, but he had no desire to injure vested interests. A commission would study the methods to so regulate the laws that vested rights would be protected.

"Regarding the spread of Bolshevik doctrine by foreign agitators, Obregon said that foreigners were not allowed to take any part in Mexican affairs, as Mexico had a system of government that would not permit foreigners to interfere to change that form. He said that when he had taken the oath of office he would not permit the spread of doctrines which would injure the State.

"The national railway lines would not be returned to private control, he said, as the Government had the controlling interest. Stockholders, however, would be given an opportunity to have a direct voice in the management so they could see that their investments were protected and that the railways were honestly administered.

"He did not consider the labor problem very serious and thought it would work out gradually with benefits to both worker and capitalist.

"When asked how relations between the United States and Mexico would be improved, Obregon stated that when Americans understood that Mexico was honest in her intentions to comply with her obligations, he was sure that their relations would be of the best. He did not fear trouble with the United States, as there were no reasons why all the small difficulties now existing between the two countries could not be arranged with an exhibition of joint good faith.

"Commercial relations between the two countries could be strengthened through excursions of and exchange of professional business men in both countries. Mexico could, through excursions to the United States, learn many things to her advantage."

Deflation and Mining

The effect of the deflation program on the mining industry is one which is always anticipated long in advance and which is greatly feared by all operators in industrial minerals. That the present state of the world's markets does not offer a distinct menace is set forth in an article in the *Engineering and Mining Journal*, which says in part:

"The long-expected and much-postponed

decline in commodity prices seems at last to have set in in earnest. The textile industry appears to have borne the brunt of the first onslaught, the woolen, cotton and silk mills now being operated at considerably reduced capacities or having shut down entirely. Merchants are confronted with daily losses on their inventoried stocks, which induce them to turn to bargain sales in order to unload. Sugar, which advanced possibly more than any other commodity equally widely used, has dropped from 25 to 19 cents retail. It is surprising how easy it is to secure it now compared with the difficulty several months ago when the market was advancing.

"Although business interests cannot expect to prosper in the next two or three years as they have in the term just passed, we can see no reason for alarm in the mining industry. Rather the contrary. Mining supplies and labor are almost certain to fall more than metal prices. The latter, with the exception of lead and iron, are too near the cost of production to be seriously affected. Iron is too badly needed for reconstruction purposes to experience any great dullness. Then, too, much construction work in which iron is used has been delayed during the last few years.

"Lead may slump some, but even with present high prices, production is too curtailed to allow much of a drop. Silver, of course, is pretty well pegged. Copper and zinc should be in greater demand month by month as normal conditions are restored. We think it unlikely that any great increase in price will take place in either of these metals, for general conditions do not favor such a change. Rather will these industries prosper through reduced costs of production.

"So although the big manufacturing industries may look on the period of deflation with some qualms, and the profiteers and speculators with actual dismay, the rest of us may profit. Things, as someone has said, affect different people differently. Adam, William Tell, and Isaac Newton each had his little affair with an apple, but with quite different results."

Oil Shale

While we hold no brief for the producers and promoters of oil shale and prospective shale reduction plants, we are interested in the possible development and use of any natural resource of such large extent and such potential value as is contained in the shale beds of America. The National Petroleum News sent one of its experts into the shale fields for the purpose of investigating, with the result that he writes an article published from which the following are excerpts. These sound somewhat like

the statements that were made by the producers of whale oil 50 and 60 years ago concerning the then new sniffed-at product, petroleum.

"In 1913 the Bureau of Mines began to investigate the oil shale deposits in Colorado, Utah, Nevada, Wyoming, Montana and California, primarily to lay the predicate for segregation of land and secondarily to ascertain the extent, character and commercial value of the deposits. Dean Winchester conducted the field work of testing the shales and arriving at approximate values and the location of the best deposits. When enough had been known to indicate the major deposits two areas in Colorado and Utah, uniting practically as one, were withdrawn as naval reserves for oil, about 86,000 acres altogether. Mr. Winchester's investigations and tests were incorporated in government reports. These reports quite naturally attracted public attention, and land-owners within the indicated deposits area saw opportunities to sell and lease their holdings and leasers and speculators gradually became active, somewhat after the manner of petroleum oil lands.

"A hundred or more stock companies were organized by residents of the States in which shales are found, beginning three or four years ago. Some of the companies, as soon as enough stock had been sold, began preparations to put up demonstration plants in Salt Lake and Denver, and finally to move some material to the locations of their leased or fee acreage, notably near De Beque, Col. Chemists and engineers saw an opportunity to design plants to extract the oil and treat it for commercial use. Two or three engineering concerns of standing, in New York and elsewhere, sent experts to the shale fields to learn if the reports warranted investment of capital on a large scale. Efforts were made to learn about the shale oil plants that had been operating in Scotland 50 years, and the Scotch processes were generally accepted as the basis for further experimentation and modified demonstration. For two or three years there was considerable activity, the Bureau of Mines taking stock in small, unpractical plants.

"The effort to establish an oil shale industry has been a series of experiments, with many failures, and at this writing there is not a plant in the United States that is turning out shale oil, either crude or by-products, and every one that is active is still experimenting. The last public statement by the Bureau of Mines warned against investment in oil shale except after the most careful investigation, and stated that oil shale, compared to petroleum, as a commercial and industrial proposition or as an adjunct to petroleum, was as one pea representing shale oil to a carload of peas rep-

resenting petroleum. Further advice was given that it would be years before oil shale development and treating would become an acknowledged and stabilized industry. It may be said, in extenuation and mitigation of this very pessimistic attitude, that the individual attaches of the Bureau of Mines who are assigned to the work of experimenting with shales are quite enthusiastic about the valuable content of the shale and believe that within five or ten years its treatment and marketing will be an established and profitable industry.

OIL SHALES ARE MYSTERY

"As a prelude to a somewhat superficial review of the oil shale situation and its fundamentals, it may be stated that the processes that are being worked on for successful adoption by the trade are known as the Galloupe, the Genet, the Jensen, the Sundberg-Lichtner-Winter, the O'Rourke, the Stallman, the Catlin, the Day, and perhaps two or three others. The Henderson or Scotch and the DeBry or French principles of retorting form the base of all experiments, probably because they have been successfully employed in commercial plants that return satisfactory dividends. This is especially true of the Henderson processes used in Scotland. So far as is known, only six plants are now active—one at Elko, Nevada; one at Dillon, Montana; one at Salt Lake and one at Dragon, Utah; and two at De Beque, Col. There is one plant at Elko, two at Salt Lake, one at Watson, Utah, and several at De Beque district inactive. A number of companies have run out of funds, are reorganizing, or have definitely abandoned further work.

"The prevailing belief is that the oil shale business consists of retorting the shale ore and that the oil content runs out into tanks like crude petroleum from wells and that a refinery treats the crude shale oil like it does crude petroleum, and the products are then marketed as common petroleum products. It sounds simple and assuring.

"Shale oil is contained in solid sedimentary substances deposited through still water on the bed of the body of water and formed from marine life, organic and inorganic—a modified fish oil, it would seem. The ore must be mined, crushed and run into a retort, where it is superheated until the gases or vapors are thrown off and through pipes conveyed to a condenser, where it becomes a black, heavy and viscous fluid of rank odor. As mere crude oil, thus run off, it does not appear to be as valuable as crude petroleum. Treated in a standard petroleum refinery the results are problematical. If gasoline, naphtha, kerosene, lubricating oil and paraffin wax are desired for commercial profit, superficially it seems that petroleum is more amenable and valuable than shale

crude oil. Analyzed by ordinary scales, petroleum appears preferable to shale oil.

RESULTS ARE SYNTHETIC

"The chemists and engineers who have delved deepest into shale and its derivatives are fairly agreed that direct methods of precipitating and stabilizing its ingredients, as with crude petroleum, do not yield satisfactory results. Oil shale is complex and reflex, and must be treated synthetically.

"There is abundance of oil shale in Kentucky, Colorado, Utah, Wyoming, Montana, Nevada and California—enough to keep a million retorting plants running a hundred years, and then some.

"Being essentially a mining operation, the cost of mining oil shale and placing it in retorts for smelting is comparatively easy to arrive at, say approximately \$1.25 per ton. Retorting should cost no more than 25 cents per ton, unless the entire refining process is completed in the retort. Reduction of low-grade mineral ores is comparable to the reduction of shale ore, commercially speaking. Final profits, while rather complex, will come as from any other manufacturing industry; they may be more or less than those following petroleum refining—inferentially less than more.

"Plant construction is so much of an unknown quantity at this writing because no commercial plant has ever been put in operation that it is any one's guess."

Comparison Favors Shale

A comparison of the possible returns from a mountain of shale which you can see and the possible returns from an oil well, the bottom of which you cannot see, at least give the edge to the shale producer so far as conservatism is concerned. The same writer continues:

"There is probably more oil shale, asphalt sand beds and ozokerite in Utah than in any other State of the Union, nature having whimsically wrapped all the oil it vouchsafed the State in solid rock and sands, the heavy oil being contained in shale beds and sand and the residue from light oil being left as ozokerite or paraffin wax. The most extensive deposits of ozokerite in the United States are located near Colton and Soldier Summit, on the Denver & Rio Grande railroad in the southeastern corner of Utah and Wasatch counties and in Carbon county, about 90 miles southeast of Salt Lake.

"After having been casually worked these ozokerite mines were opened during the late war and a new plant operated regularly to meet enlarged demands. The mineral occurs as a filling in fissure veins of sandstone and

shale varying in width from five to six feet, the ozokerite ranging from mere films to 22 inches in thickness. The ore, so called conveniently, is quarried, sorted and crushed before being placed in steam-heated vats containing water raised to a temperature of 54 to 70 degrees Centigrade. The wax melts and floats off as a liquid into cooling vats, the rock substance draining off at the bottom. A second and third boiling clarifies the tailings. The refined wax is then heated in an open vat to remove trapped moisture and turned into molds for marketing. Further treatment produces ceresine. Filtering is through fuller's earth, alkalis, animal charcoal or magnesium silicate.

"Refined ozokerite is used for some of the purposes that paraffin wax extracted from petroleum is put to. As a vaseline it is filtered through animal charcoal from 12 to 30 times and super-heated steam at 250 degrees Centigrade for three or four hours. When ozokerite is finished for market it is employed in the manufacture of wax figures, dolls and candles; as a substitute or adulterant for beeswax; as a covering to protect metals from moisture, acids and alkalis; for waxing paper and lining barrels and acid tanks; as a foundation for waxes, polishes, liniments, salves and plasters; for imitation alabaster statuettes and decorations for confections; for imitation honeycombs, blacking and polishes for boots and shoes, varnish, shoemakers' and floor wax; as a base for a variety of lubricants from axle grease to gun oil; in the manufacture of leather polish, sealing wax and pomades, and as electrical insulation. The bulk of the 1918 output was used as an acid-proof coating for electrotype plates.

"The Utah deposits are not inexhaustible, but are sufficient to form a profitable industry on a reasonable scale, and add somewhat to the paraffin output of petroleum refineries. An extensive manufacturing concern in New Jersey, in its efforts to buy paraffin wax, has discovered that the output of the big refineries like Standard and other plants is absorbed to the maximum, making it difficult to find a dependable source of supply for independent industrial purposes. One of the most pretentious oil shale demonstration plants hopes to specialize on paraffin wax if experiments now going on demonstrate its presence in oil shale in sufficient volume to warrant. This is a suggestion to oil shale operators."

Echoes from Burkburnett

On another page the same journal publishes this statement concerning the Burkburnett field. Compare the statements of two or three years ago about Burkburnett and the statements of any of the wildest

shale promoters about their properties and the present outcome of each and again shale has it on the other for conservatism:

"With Wichita Falls sand district production of Texas barely exceeding 90,000 barrels daily, and with the major pipe lines handling fully 50 per cent of the oil, a tightening is apparent in the opportunity for the independent skimming plant operator to obtain crude oil for his refinery. This is particularly true of the 'boom' plants built around Wichita Falls on the strength of the high flush production of a year ago.

"Fully half of the crude not taken by the major pipe lines is finding its way into the hands of the independent purchasing agencies, some of which maintain short-line systems from the fields to railroad loading racks for tank car shipments and others of which built plants through which to refine this crude.

"Refineries in the Wichita Falls district which own at least a part of their own production, and which number approximately half a dozen, account for an additional consumption of the daily output of crude from the wells. As a result the 'boom plant' operator is out on a limb and with little financial stability behind him, he is unable to finance his purchases of raw material. Where he is able to make financial arrangements he is paying premiums normal at 50 cents a barrel above the posted price, and sometimes even higher, while the more stable independent purchasing agencies are paying a minimum premium of 25 cents under contract and normally 40 cents a barrel otherwise.

"Whereas the wells on the Burkburnett townsite are now down to a per well average of about four and a half barrels daily, this territory with the Burkburnett old (shallow) pool and the southeast Burkburnett (Texhoma) pool development shows an average for the combined territory of eight and two-one hundredths barrels to the well.

"Northwest Burkburnett, lumping the Burk-Waggoner (northwest extension) pool, the river bed territory and the Emerich development, together with the Sparks area beyond the so-called 'extension,' gives a daily per well average of approximately 29½ barrels daily. Wells in the Emerich pool, beyond the northwest extension, and to the south where the Texas Company's C. Birk lease has been a prolific recent development, hold up to this general average against a smaller showing were the northwest extension proper to be considered alone.

"In the old Electra pool, the original development of the Greater Wichita Falls district, which dates back to the 'discovery'

well in 1911, the per well average production at the present time is roughly seven and three-quarters barrels daily, on a settled basis."

Seen from the Other Side.

This article from the *Petroleum Age* seems to take a somewhat different attitude from the one just quoted and it is an interesting enough reverse of the opinions just expressed to stand by itself without further commentary.

"Has the time come to build plants for the reduction of oil shale? Every indication points to the fact that that day is here. In the West is shale enough lying untouched to give us several hundreds of billions of barrels of oil.

"The shale means that, come what will, America will have for 500 or 1000, maybe 2000 years, enough oil for its industries and its defense. It means that we are not dependent upon our oil wells or the oil wells of other nations if our wells should be milked dry.

"Until recently little thought has been given to the oil shale hills. Petroleum was too plentiful. The price was low. It was cheaper and quicker to get it from flowing wells than to reduce the shale rock.

"With the present demand for oil prices have risen to a point where the shale can be handled at satisfactory profits. Indications point to the permanence of this condition.

"Shale oil reduction is no poor man's game. Plants of commercial size run into big money. Under present methods the smallest unit, 100 tons daily capacity, would cost \$100,000 or more. A number of plants are being built this summer.

"Seventy-five years ago, before oil was struck in Pennsylvania, the production of oil from shale had begun to gain a foothold. Some oil was being reduced from coal and lignites which gave kerosene the name of 'coal oil' in those days. Later the Mormons built crude stills for the reduction of Utah shales.

"But with the cheaper production of crude oil from wells and the dropping of prices the industry vanished. Now, with higher prices returning, the modern shale oil industry has been born. Harry Flynn, president of the Oil Shale Mining Company, reports that a multitude of tests have proved that the massive or black shale, by the company's improved system, can be reduced without fusing or coking.

ELKO PLANT MOST COMPLETE

"Probably the most complete plant constructed so far is that of the Catlin Shale

Products Company, at Elko, Nev. The company was organized by R. M. Catlin, president of the New Jersey Zinc Company. Mr. Catlin pioneered in the mining industry in Nevada.

"At the same point the Southern Pacific Railroad has constructed a retort of the Pumpherson or Scotch type. The United States Government co-operated with the railroad in that undertaking. This retort was completed last fall. It is believed that the railroad company is making this experiment for the purpose of developing fuel oil for its locomotives.

"One of the remarkable things about oil shale, aside from its comparatively inexhaustible quantities, is the vast range of its by-products. And science is adding to these steadily. Some of the products easily recognized and having a fixed commercial value are as follows:

"Gasoline, paraffin, kerosene, naphtha, lubricating oil, motor spirits, fuel oil, still grease, still coke, ichthyol, perfume base, dry base, paints, varnish and enamel base, mineral turpentine, roofing and paving materials, mineral rubber, fertilizers, ammonium sulphate, nitrates, phosphates, etc.

"Government investigators who have measured and tested much of the Colorado and Utah oil shale have estimated the yield of oil in certain districts as 20,000 barrels to the acre. Some believe that, with the prices sure to prevail, the shale can be reduced at a cost so that it will net \$2 a barrel profit.

"Of course, future values of petroleum and future costs of production are a matter impossible of determination at this time but the estimates nevertheless are interesting."

Several Plants Operating

Somewhat in opposition to the news brought by this report is a review of the present oil situation presented in *The Shale Review*:

"While it is conceded that the treatment of bituminous shales in the United States is still in its infancy, as a business proposition, it is not generally known that there are six completed plants, located in the shale fields, which have produced several hundred barrels of shale oil. In addition to these retorts there are four others, located in Western cities, which are of sufficient size to treat several tons daily. These city plants have all been operated with sufficient quantities of shale to justify their classification as commercial units. There are also other retorts under construction and many more being exploited. Not a single one of these can be classed as failures. All produce a product that performs all the functions of

oil obtained from wells. In some respects shale oil is superior to the average petroleum produced by present drilling methods. The average man who has read of oil shale is ready to state that it will some day become an important industry if they "ever invent a process." In answer to this oft quoted remark, which is an inference that there is no device for satisfactorily treating shale, the following description and list of completed shale retorts is submitted.

"On the eastern edge of the Colorado shale fields the Continental Oil Shale Mining and Refining Company has recently completed a 50-ton retort which has been operated successfully. This plant is continuous in operation and is a vertical cylinder through which the shale passes by gravity to a water seal at the bottom.

FIRST SHALE OIL MADE

"The first shale oil made in the United States, except in an experimental way, was made by the Oil Shale Mining Company, whose retorts are located about 12 miles northwest of DeBeque. A Henderson (Scotch type) retort was built by this company in 1917 and has produced oil in a considerable quantity at various times. Since that date the same corporation has experimented with a continuous type of retort known as the Young progress, but is now constructing two additional tubes similar to the first retort. Oil produced in this plant has been sold for special purposes and the company is prepared to market its oil in quantity.

"The properties of the Mt. Logan Oil Shale Company are also located near DeBeque. Mt. Logan is the highest peak in the vicinity, the top of which consists of a large body of rich shale. This company has built a tramway to the top of the mountain and located its shale retort at a lower level. As pioneers in the business some experiments were made with retort construction, but a device known as the Simplex process has now been finished and quite a quantity of oil produced. Although the shale deposits of the Mt. Logan Company are on a high peak it is noted that the distance from railroad transportation is short, somewhat less than five miles.

"The Western Shale Oil Company, organized at Grand Junction, Colorado, completed a single unit of a Galloupe retort on its properties near Dragon, Utah, last spring. The location is a few miles from the town of Dragon on the Uintah railway, a narrow gauge line which connects with the Denver & Rio Grande at Mack, Colorado. The shale retort and properties of the company are about eight miles from Dragon and about the same distance from the Colorado state line. The plant has made a number of runs and produced a quantity of oil. In the process of treatment the oil is fractionated. The

lighter portions have been used successfully in operating the company's motor truck. The plant is being enlarged to five times its present capacity.

NEVADA HAS LARGEST RETORT

"The largest completed shale retorts in the United States are located at Elko, Nevada, the property of the Catlin Shale Products Company, a private enterprise of R. M. Catlin, president of the New Jersey Zinc Company. These retorts have been operated over considerable periods. Several hundred barrels of oil have been produced and same is now in storage on the company's property. For the purpose of utilizing this oil commercially a refinery is nearing completion. This refinery will recover motor spirits and paraffin wax and other refined products of petroleum.

"The oil shale industry in the United States has, therefore, reached the point where it has been fully demonstrated that oil can be made from our American shales by practically any device which primarily consists of a heated air-tight chamber from which the vapors are carried to a cooling apparatus known as a condenser. Most of the experimenting in retorts has been with the idea of obtaining faster results as compared with the Scottish or intermittent method. Numerous inventors have worked on this problem and the fact that there have been so many devices exploited has given the impression that the problem of a process is unsolved. Nothing remains to be worked out except improvements or speed.

MARKET CONDITIONS

"The market for shale oil is still for the future. While the plants above described have all made oil, which is a good commercial product, most of them are remote from railroad transportation and the product is something for which the market has not been prepared. Oil refineries find that shale oil requires some treatment different in many ways from that followed in handling petroleum from wells. Refinery men are not familiar with this article and the transportation and treatment and the marketing of the shale oil refined products is yet to be worked out, but it is believed that no serious obstacle will be encountered in these operations and in a short time quantities of this product will be sold in the market."

Uses for Crude Shale

Another article in this same magazine treats of a most interesting and immediately possible commercial use for shale in its

crude form, which reads very logically in these days of \$12 and \$15 coal.

"Another use for oil shale has been discovered by P. O. Perkins of Salt Lake City. A test was made in Salt Lake recently at the Semloh Hotel, according to the Salt Lake Tribune.

"A mixture of soft coal and shale broken to approximately one-inch mesh, was spread upon the firebox of the Semloh Hotel boiler. The coal was thrown into the firebox as under ordinary circumstances, and the shale, in quantity about one-fourth of the amount of the coal, was thrown on the top of the coal. In several moments the steam gauge began to rise steadily. When the party went out into the street no smoke could be seen issuing from the stack.

"As soon as the charge of shale had been burnt out, Mr. Perkins had the furnace fired with coal without any shale. Immediately a black column of smoke rolled out of the stack. The virtues of the mixed fuel, consisting of shale and coal, is its simplicity of use, its economy and its perfect combustion, according to Mr. Perkins, who has patented the process and spent considerable money in experiments and trying to interest capital in the plan.

"The simplicity of my plan for eliminating smoke is perhaps its chief drawback," said Mr. Perkins. "People are skeptical that so simple an operation can give so excellent results. This shale-coal fuel can be used in any furnace. As there is an inexhaustible supply of oil shale in Utah, and as the shale can be produced cheaper and marketed at a less cost than coal, not only will the use of mixed shale and coal solve the smoke problem here in Salt Lake City, but it will mean a more efficient fuel at a reduced cost. Some engineers have raised objection to using shale in the furnace on the ground that the mineral will clinker and clog the fire grates. I have found that the shale, crushed to the size we used it, burns to a light substance easily broken to powder and adding little ash and no clinkers."

THE PERKINS PROCESS

"Mr. Perkins explained his process as follows:

"By burning oil shale with coal in proportions of about one of shale to four of coal, a perfect combustion is secured. Coal, when used alone, lies on the fire some six to eight minutes before it begins to blaze, and during this period and for a time afterward it gives off heavy gas and carbon which, not having the flame to burn them, passes away in smoke.

"When oil shale is used with the coal in the proportion above stated, a very different

action takes place. As soon as the shale is thrown in the firebox it blazes up with a steady, hot flame which burns the gas and carbon that is cast off by the coal, making a perfect combustion and positively no smoke.

"To eliminate smoke in an ordinary furnace using coal alone, it is necessary and so ordered by the city inspectors to open the door of the fire box from two to four inches. This causes cold air to rush over the fire and prevent the smoke showing. The reason for the smoke not showing is because the air thins it out. The gas and carbon are there just the same, and pass up the chimney unburned and invisible, and so many heat units are thereby lost. In my opinion, at least half the efficiency of the coal is lost while the door remains open.

"With the use of oil shale and coal the door of the firebox is closed tight, securing full efficiency of the fuel. Further attention is called to the greater efficiency of the oil shale-coal fuel, in the fact that the perfect combustion secured and eliminating the smoke leaves the heating surfaces of the boiler clean, allowing it to work at highest efficiency at all times, thereby making a big saving in fuel.

"After firing with coal alone the steam gauge drops back from 10 to 15 pounds. Firing with the oil shale fuel it does not drop back. It rises at once. This means much better results from the fuel."

Magnesium

The following interesting review of a little known but very valuable metal appears in a Geological Survey report:

"The lightest metal now known that remains comparatively unaltered under ordinary atmospheric conditions is magnesium, which is only two-thirds as heavy as aluminum. Magnesium is a beautiful silvery-white metal that has been made in the United States only since 1915 and is now made at but three plants. It is known to comparatively few people and to most of those few chiefly as a silvery powder used for making flashlights in photography. It was imported from Germany for this use for many years. During the world war large quantities of powdered magnesium were made in the United States for use in star shells designed to illuminate battle fields at night, as well as in special shells designed to show in daytime exactly where the shells containing it exploded. The white cloud by day and the brilliant white pillar of fire by night—both striking features of the battle fields of the world war—were produced by the combustion of magnesium.

"Magnesium in massive form, as sticks or rods, is used to deoxidize other metals in foundries and is a constituent of alloys.

More magnesium is now used as a deoxidizer or scavenger in metallurgy than for any other purpose, but its employment in alloys is increasing and may eventually become the largest one. An alloy of magnesium and aluminum is used in making castings for aircraft engines and parts of airplanes. The skeleton of the British airship R-34, the first dirigible to cross the Atlantic, is an alloy of aluminum and magnesium, and the yacht *Resolute*, the defender of the America's cup in the races in July, 1920, as well as the alternative defender *Vanitie*, carried gaffs made of this alloy.

"The demand for metallic magnesium has slackened since the war, however, and in 1919 its production in the United States amounted to 127,465 pounds, valued at \$247,302, a decrease of 55 per cent. in quantity and 60 per cent. in value from 1918. A report on the magnesium industry in 1919, by R. W. Stone, can be obtained free on application to the Director, United States Geological Survey, Washington, D. C."

Magnesite

In a splendid article on the development of the magnesite industry in the State of Washington the *Northwest Mining Truth* of Spokane makes the following statements concerning the possibilities of these large magnesite deposits and the necessity for their protection by some tariff recognition:

"When war broke out in 1914 almost every pound of magnesite used in the steel industry of the United States was derived from quarries in Greece and Austria and laid down on these shores at prices prohibitory to domestic development. Immediately after war commenced, although the main deposits in Austria were owned by American capital, a German officer was placed in charge and no shipments were subsequently made without Germany's consent.

"For nearly two years prior to declaration of war by the United States the foreign supply was entirely cut off and if it had not been for the foresighted men who commenced the development of Stevens county's great deposits in 1916, it is conceivable that war munitions would not have been forthcoming from this continent.

SENATE DELAYS ACTION

"In spite of this condition, and the fact that the United States is in position to produce all the magnesite necessary for its industrial life from domestic sources, Congress hesitates to place a proper embargo upon the foreign supply, which, in event of another war, would again be closed to us.

"In four years at least \$3,000,000 has been expended in development of the northern de-

posits. The expenditures include cost of a 16-mile standard gauge railroad—the Spokane, Valley & Northern—from Valley to the Allen quarries of American Mineral Production Company, the great reduction plant of Northwest Magnesite Company, one mile from Chewelah; a five-mile tramway from that plant to the quarries at Brown's Lake; extensive surface equipment of crushing plants, kilns and camp buildings, and excavations that have already yielded close to 500,000 tons of crude magnesite.

TARIFF WOULD END MONOPOLY

"Some idea of what would be the inevitable result in event of provision of a satisfactory import duty upon foreign supply is gathered from the fact that American Refractories Company, which owns much of the supply in Austria, has recently obtained a tentative footing in Stevens county through an option upon the holdings of Valley Magnesite Company, owning the Double Eagle deposits. If the tariff be provided, it is certain that the company will become a big factor in the Stevens county fields, but if the Senate refuses to ratify the action of the House, it will doubtless retire to its foreign base, safe in the knowledge that heavy freight rates from Stevens county to Atlantic points will definitely kill the local industry in favor of Europe.

"In the opinion of Mining Truth the suggested tariff is the most important matter now before Congress, so far as the industrial Northwest is concerned."

EVILS OF FOREIGN CONTROL

A world monopoly of any vital article of commerce is almost as much to be feared in the hands of one country as in the hands of another. The fact that the magnesite monopoly was apparently in the hands of interests which were identified with enemy countries during the war has been justifiably emphasized in the fight that the magnesite industry has made for an adequate protection for the industry in the United States. *The London Mining Journal* says:

"It is announced that Schneider-Creuzot, acting on behalf of magnesite consumers in France, the Sarre, and the Grand Duchy of Luxemburg, have acquired a large interest in the Veitscher Magnesitwerke, in Styria. Further operations are reported with a view to controlling in a large measure the world market in magnesite."

The reverse of this situation is shown in the same journal for June 5, 1920, in which it is stated that Asia Minor chrome has been acquired by German interests. Chrome,

heretofore, has been largely imported from French countries or countries under French control and mines operated by French concessions:

"It is reported that of the 40 chrome-ore mining concessions in Asia Minor, the chief of which are situated in the provinces of Brusa, Smyrna, Alfana and Konla, only 18 are at present being worked. Germany is interested in some of the mines in Brusa, from which she is stated to have obtained 5,000 tons of ore during the war. The tenor of the ore in the various deposits is between 40 and 50 per cent. chromic acid; the stocks at present available for shipment are estimated at 20,000 tons. Up to now the chief importers have been the United States (70 per cent.), France (17 per cent.) and Holland (11 per cent.)."

The necessary thing in this country is to have the mining industry so protected that these shifts from a former enemy to a former friendly country or vice versa will not be of paramount political and industrial importance to the basic industries of this country which depends on these ores for their finished products.

Iron

An interesting review of the iron and steel industry in Japan is given in the *Mining Journal* of London, England:

"Some estimate of the position and outlook of the Japanese iron and steel industry since the war has been made recently in trade circles in that country, and, formed in the presence of the recent slump, it is naturally not very cheerful. The recent history of the industry is summarized briefly in the Japanese press to the following effect: The iron industry showed remarkable development during the war, the cause being a stimulation through the stoppage of foreign supply. Japan, although she still today relies on foreign supplies, was far more largely dependent in pre-war times, as her own iron industry in those days was only in a primitive stage, and it was only by disregarding all commercial and economic considerations that Japanese iron could be put on the market in competition with British, American and German iron, by the State iron works at Yawata, Kamaishi and Wauishi, and the Nippon steel works, and a few other small concerns. This was far from sufficient to meet the domestic demand, the rest being supplied from abroad. Among the above works, the Nippon steel works undertook and still undertakes mostly the manufacture of firearms, while many other works served very largely the requirements of the

Government rather than the demands of the people, so it will be easily understood that the industry was anything but satisfactory. So far as nominal private undertakings went, the output of pig iron at that time stood in the neighborhood of only 100,000 tons a year. Things, however, took a sudden change for the better during the war. Imports from England and Germany came to a standstill, and, after America came in, the American supply was also subject to regulation. Those who could get iron were not slow in turning this situation to their advantage. The shipbuilding and mechanical industries were in need of great quantities, and willing to pay any price. Prices rose, and the prospects of the iron industry became brighter. Capitalists with money to invest were not slow in seizing this opportunity, and many new or enlarged concerns sprang up. The Nippon Steel Pipe Company, the Osaka Iron Works, the Nippon Pig Iron Works, the Tokyo Steel Manufactory, the Oshima Steel Works, the Nippon Steel Works (not the Nippon previously mentioned), the Fuji Steel Works, the Tokyo Steel Works, the Toyo, Aushanchan, Penkihiu and Kyomipo Iron Works, etc., were among the leading companies owing their existence, or at least their importance, to the war. The output of pig iron consequently considerably increased, as compared with the pre-war level, amounting to about 600,000 tons.

NIPPON'S MARKET BREAKS

"It was expected that if things continued on these lines Japan would soon be independent in her supply of iron, and the Government and the people encouraged the development of the industry in every possible way. But the war came to an abrupt end, and the proclamation of the armistice in the autumn of 1918 dealt a severe blow to Japan's iron industry, coming as it did just at the moment when it was being solidified firmly. Fears were then expressed concerning the possibility of a great decrease in demand for iron, and prices began to fall. The prospects of the re-appearance of foreign manufactures became imminent, and when England and America lifted their embargo on the export of iron, it dealt a severe blow to the Japanese iron market, which did not fail to have its effect on the iron industry. Prices fell precipitately, pig iron from Y. 550 per ton to about Y. 100, steel plate from Y. 2,500 to about Y. 300, and iron bar from Y. 400 to about Y. 130. The difficulties of both the dealers and manufacturers became acute. The cost of production, however, remained as high as ever, and this added to the difficulties of the smelters. Many iron works were closed, while dealers, who had been carrying on a speculative gamble, went

bankrupt. Endeavors were made to keep up the market through the reduction of output, and this was done, but it did not bring about any noteworthy result for a long time. In such circumstances it follows that many of the iron works, which came into existence in such force, found themselves unable to pay any dividend, even for the first half of 1919, when they still had the advantage of the expiring impetus of war. The Nippon Steel Works, the Fuji Steel Works and the Osaka Iron Works, for instance, either suffered a loss or could not pay any dividend.

SMALL FIRMS SUFFER MOST

"From the beginning of the present year, however, things began to recover somewhat, as the import of iron from England and America became difficult for various reasons. All went on very smoothly till about March, when the slump came. With the sudden stringency of money, iron, like many other commodities, became very difficult to hold, and prices declined to an unwarrantable degree, when compared with those of foreign markets, while there is no prospect of an early recovery. Small companies are in greater difficulties than the larger ones, and are being closed, while it is reported that two or three of them have long since been 'resting'. Fears are expressed that if the slump continues long, of which there is, unfortunately, every possibility, even those iron works still at work can only be saved from bankruptcy by specializing in some particular line."

Vanadium

In a review of the mining industry in Peru, the *Mining Journal* of London, England, has the following to say of vanadium in the South American Republic and of the operations of the Vanadium Company of America in this field:

"VANADIUM.—One of the most interesting of the Peruvian products is vanadium, the Republic contributing about 96 per cent. of the world's output. The history of this industry is remarkable. As our readers well know, it is controlled entirely by the United States Vanadium Company, which, in addition to the practical monopoly which the possession of the Minas Ragra deposits confers upon it, not long since acquired control of its chief, if slight, competitor, the Primos Chemical Co. in Colorado. The output in 1918 showed a heavy decline, both as regards tonnage and also grade of concentrates, the figures being 2184 tons of ore with a total content of 666 tons of vanadic acid, com-

pared with 4083 tons of concentrates containing 1461 tons in the year previous—that is to say that the output was barely 42 per cent. of the previous year, and this goes far to explain the complaints which have been current in recent months of the difficulty of obtaining supplies in this country, and of the high prices charged for vanadium alloys. When it is considered that the production of these mines since 1907 has constituted over 90 per cent. of the world's output, and has in that time aggregated only 5518 tons of metallic vanadium, the important place which the substance has won in the world of alloys, especially in connection with the automobile industry, must be a matter of surprise, and is a remarkable justification of the foresight of those who have scientifically created a demand for a product which, until recent years, was of no commercial value. As our readers are aware, the company is now busy completing complicated transport arrangements, which should permit of much more extended, and also cheaper, operation when they are completed, which should be in the autumn. It is calculated that there is ore now in sight at Minas Ragra which should yield 16,000 tons of metallic vanadium, or about three times the output up to the present date, and that deposit contains probably not less than 45,000 tons, so that the position in relation to the supply of this rare metal ought to be eased in the course of next year."

Zinc

Mining and Metallurgy for September publishes a most interesting article on recent developments in the Tri-State Zinc District of Oklahoma, Kansas and Missouri, of which the following are some of the pertinent excerpts:

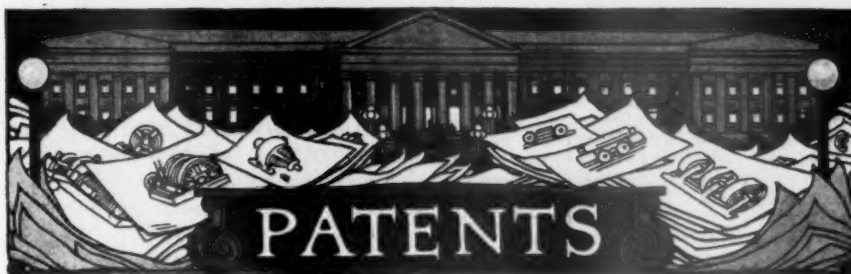
"The Tri-State field is now believed to be the largest zinc district in the world. It has a potential production sufficient to supply the entire zinc demands of the country. It is estimated that a train 70 miles long would be required to haul the district's 1919 output of 60 per cent. zinc concentrates. For many years, including 1917, Missouri surpassed Oklahoma in zinc production. In 1918, however, Oklahoma led by a wide margin and, in 1919, Missouri produced less than one-sixth of the total for the three States, when Kansas replaced Missouri in second place in the production. The district is now producing one-third of the zinc of the world and twice as much as ever before at the present price.

"During the war, the price of zinc concentrates in the Joplin district was \$130 per ton for 60 per cent. zinc content for a short time, and remained at \$100 for some months; it averaged about \$98 for the year 1917. With an average of \$83 for 1916 and \$87 for 1918,

there was a stimulus to drill prospecting and opening up new fields, which had an unexpected effect upon the Tri-State district. The bulk of production has been shifted 25 miles southwest, chiefly to the Quapaw Indian Reservation, near Baxter Springs, Kans. Most of the old Webb City sheet-ground mines are filling with acid water with little prospect of their being reopened for many years. Galena, Granby, Joplin, and Webb City have been all but abandoned, except at Oronogo, and near Webb City, where a community drilling program has been started. The first piece of land leased and drilled out developed rich lead ore near Webb City, and the discovery was sold at auction for enough to finance drilling campaigns on a number of other promising tracts. A mill is already operating on the site of the first venture. Since the cost of mining and milling, which was about 90 cents per ton in the Webb City sheet-ground area, has reached a figure close to three times that amount in the new Picher field between Miami, Okla., and Baxter Springs, Kans., the 2 per cent. mines of the old Joplin district have practically all been closed and only the best of the ore can be mined in the new area, covering something over 30 square miles. One of the best known mines on the Kansas side made a recovery of 14.9 per cent. last year. A recovery of twice this is sometimes reached for a short time, and most of the mines recover from 5 to 8 per cent. in 60 per cent. zinc concentrates. Many mines are being closed because the present price of zinc concentrate runs from \$40 to \$45 per ton and is averaging less than the 10-year average before the beginning of the war. With costs nearly three times as great and the price of the product around \$42.50, many companies cannot hold out."

CANADIAN PIG-IRON

Production of pig-iron in Canada during the first half of 1920, according to statistics of the Department of Mines, Ottawa, was 502,667 short tons, as compared with 524,977 during the corresponding period of last year. The average monthly production during the first half of 1920 was 83,778 tons, as compared with 87,496 tons during the first half of last year, and with 76,482 tons per month for the whole of last year. Production for the last four years was as follows: 1916, total, 1,169,257 tons; monthly average, 97,438 tons; 1917, total, 1,170,480 tons; monthly average, 97,540 tons; 1918, total, 1,195,551 tons; monthly average, 99,629 tons; 1919, total, 917,781 tons; monthly average, 76,482 tons.



CONDUCTED BY JOHN BOYLE, JR.

1,348,407—*John E. Greenawalt*, Denver, Col.

Blast Roaster, comprising an open-top holder for a charge of material to be treated, an igniting member movable relatively to said holder and adapted to be temporarily positioned over the holder and its charge in non-movable relation thereto, and operating to ignite the charge at its surface while so positioned.

1,348,408—*John E. Greenawalt*, Denver, Colorado.

Process of Roasting Ores, which consists in subjecting a charge of the material to the traverse of gases through the charge downward from a chamber superposed above the charge, projecting from fixed points above the charge ignition fuel into said chamber, igniting said fuel, and supplying combustion, supporting gases to the fuel during the period of its projection into the chamber.

1,350,364—*Benjamin H. Dosenbach*, Butte, Montana.

Flotation Process, consisting in subjecting a modifying agent, such as oil, to the solvent action of water to remove soluble matter therefrom, in producing the remainder of said agent in the gaseous state into an ore-pulp, thereby effecting flotation of certain constituents of the ore, and separating the floated constituents from the remainder of the ores.

1,350,040—*E. W. Davis*, Duluth, Minn.

Apparatus for Agglomerating Ores, comprising a series of trucks mounted on a track and adapted to receive charges of ore, a vacuum chamber adjacent to said truck, airtight communications between each of said trucks and said vacuum chamber, and reciprocating feeding means mounted adjacent to said track and adapted to move said series of trucks by engagement with one of them, said feeding means automatically engaging the truck on its forward stroke, but passing by said truck upon its return stroke.

1,350,647—*G. H. Elmore*, Swarthmore, Pa., and *H. L. McLean*, Scranton, Pa.

Discharge Control for Jigs, comprising a perforated bed or screen for supporting the material to be treated, an outlet at the discharge end of said screen for the escape of heavier materials, an overflow for the lighter material, a discharge valve controlling the escape of the heavier materials, a stationary imperforated casing above the bed or screen, a float within the casing, a rock shaft provided with a radial arm from which said float is suspended, and connections between the rock shaft and the discharge valve whereby said valve is caused to discharge the heavier materials when the float is elevated to a predetermined level by the building up of the heavier material beneath it.

1,350,706—*Charles E. Davis*, Chicago, Ill. Assigned to Goodman Manufacturing Co.

Mining Machine, comprising a frame, a cutting device projecting therefrom, a feeding mechanism for feeding the cutting device laterally towards the material to be acted upon, a motor for actuating the feeding mechanism, a retarding device for retarding one end of said machine comprising a drum mounted on the frame and disconnected from the motor, a flexible power transmitting device connected with the drum and with a fixed part at a distance from the machine, a gear connected with said drum, a worm-wheel operatively connected with said gear, a worm engaging said wheel, and means for rotating said worm so as to rotate said drum.

1,349,641—*Ivan B. Wathem*, Strattonville, Pennsylvania.

Mining Implement, adapted for manual operation within a limited space, which is portable and can be used for undermining strata or seams of ore or coal. The implement consists of a cutter bar which is supported on a tripod and adapted to be moved back and forth between supporting rollers, and due to the weight of the bar a blow of great power can be delivered with a moderate expenditure of energy.

1,351,096—*David Cole*, El Paso, Tex. Assigned to Mineral Separation North American Corporation.

Apparatus for Separating or Concentrating Ores, comprising a tank having an inlet at one end, an outlet at the opposite end, and a plurality of sizing compartments at the bottom, said tank being constructed and arranged to permit a free flow of material there-through in a substantially horizontal direction from the inlet to the outlet and above said compartments, and a series of vertically disposed spaced shutters within said tank, and said shutters having slate downwardly inclined in the direction of flow.

1,351,155—*James B. Brown*, Denver, Col.

Ore Flotation Apparatus, comprising a container divided into a feed chamber, a separating chamber provided with an overflow, and a transfer conduit which, adjacent to its bottom, communicates with each of the chambers for the reception of material, and which has an outlet adapted to deliver material in sheet-like form on to the liquid level in the separation chamber, determined by the overflow, and means for introducing a gas into the lower part of the transfer conduit.

1,351,234—*J. M. Draper*, Bridgend, England.

Hydraulic Separator for Coal and Ores, comprising an outer tube, an inverted conical chamber contained within the upper part of said tube, and from the apex of which another tube extends downward, a central feed fitted with a telescopic adjustable delivery tube to regulate the point of delivery, a connection for the admission of liquid to the other tube below the top of the inner one, and a circular overflow ledge above the upper end of said outer tube.

1,351,563—*James C. Gaskill*, Fairmont, West Virginia.

Adjustable Bar Coal Screen.

1,351,593—*Edwin N. Weaver*, Jersey City, New Jersey.

Coal-Handling Machine, comprising a plurality of pairs of crushing jaws, the jaws of each pair being movable towards and from each other, a crusher actuator beneath the jaws, connections between the actuator and the jaws to cause reciprocation of the jaws of one pair in a direction opposite to that in which the jaws reciprocate, the actuator being moved in a direction perpendicular to the direction of the movement of the jaws.

MEXICAN TAX RULING

On September 15 the Mexican Government fixed October 31 as the last date for the payment of 1920 mining quotas.

SAND-LIME BRICK IN 1919

Sand-lime brick produced in the United States in 1919, according to an estimate made by the Geological Survey, amounted to 145,000,000 brick, valued at \$1,725,000, an increase of 47,000,000 brick and of \$841,000 over 1918. The maximum output of sand-lime brick—227,344,000 brick—was made in 1916, but the maximum value was that of 1919.

The output of common brick was 142,755,000, valued at \$1,688,000, an increase of 45,937,000 brick and of \$822,000 compared with 1918. The rest of the output was face brick, which showed an increase of 664,000 brick and of \$19,000 compared with 1918. The average price of common brick per thousand in 1919 was \$11.82, compared with \$8.94 in 1918, \$7.54 in 1917 and \$6.43 in 1916. The average price of face brick in 1919 per thousand was \$16.48, compared with \$11.35 in 1918, \$9.36 in 1917 and \$9.64 in 1916.

PERSONALS

B. Britton Gottsberger, formerly of Arizona and now of New York, spent several days in Washington during the month.

L. C. Graton, formerly of the Natural Resources Division of the Internal Revenue Department, now in private practice at Cambridge, Mass., was a caller at the offices of the Mining Congress September 23. Mr. Graton, after a short stay in Washington, returned to his home and will leave early in October for an extended trip to Peru. He anticipates being out of the United States six months or longer.

John C. Howard, president of the Utah Refining Co., Salt Lake City, Utah, and director of the American Mining Congress, presented a paper on "Relative Value of Western Lubricating Oils" to the twelfth annual national convention of the Independent Oil Men's Association, held at Denver during September.

Dr. W. C. Phalen, formerly geologist in the United States Geological Survey and mining technologist in the Bureau of Mines, has been engaged as geologist by the Solvay Process Co. of Syracuse, N. Y.



The Old and the New

JUST as the oxy-acetylene torch has replaced the mighty hammer blows of the old time smith—just as the cutting flame has superseded the hack-saw—so oxwelding has taken the place of many cumbersome and costly production operations.

Wherever metals are to be joined, oxwelding makes the neatest, strongest joint and

makes it in less time, with less labor and for less money.

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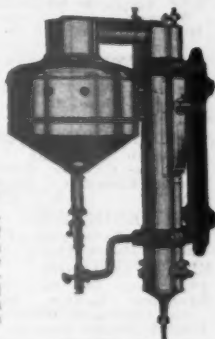
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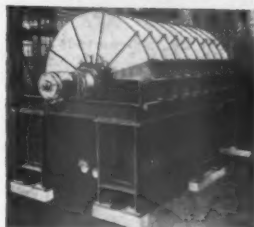
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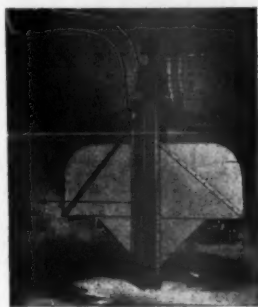
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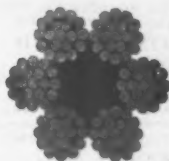
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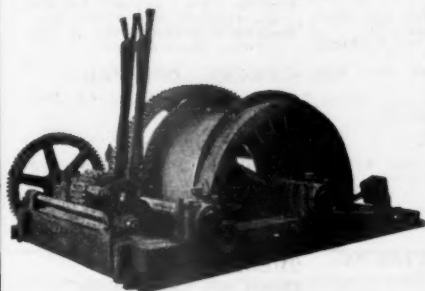
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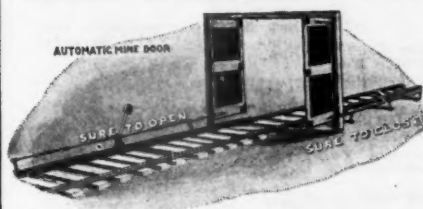


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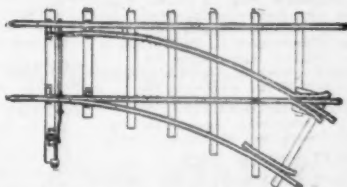
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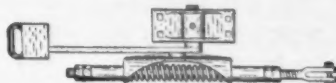
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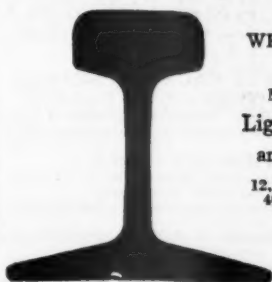
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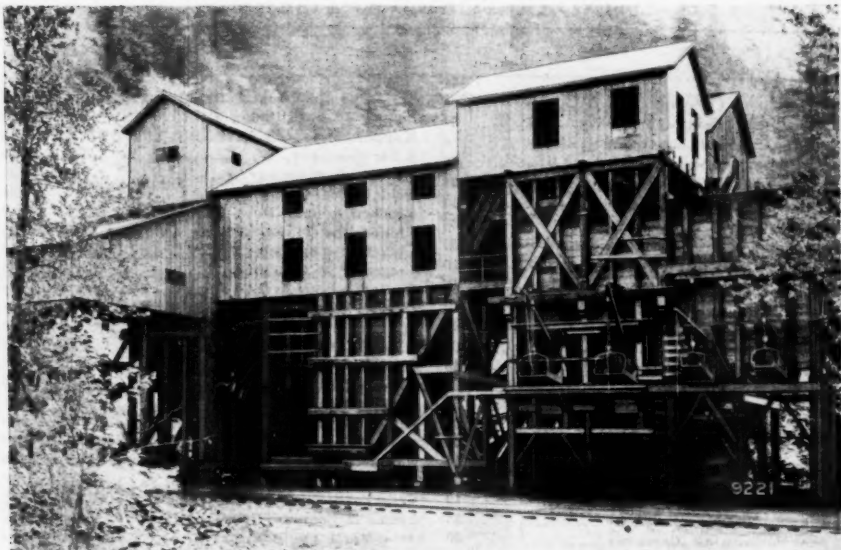
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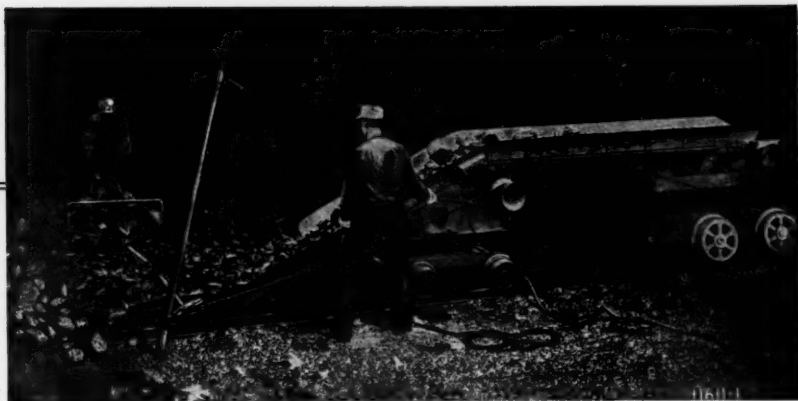
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